SCREWED AND SOCKETED
STEEL TUBES
And
FITTINGS

POCKET CATALOGUE
SECTION 1
1954

S & L

SCREWED

AND

SOCKETED STEEL TUBES AND FITTINGS

Pocket   Catalogue

Section   1

1954

TRADE
S & L
MARK

STEWARTS AND LLOYDS, LTD.

GLASGOW   BIRMINGHAM   LONDON

STEWARTS AND LLOYDS, LIMITED

OFFICES AND WAREHOUSES :

GLASGOW, C.1.   41 Oswald Street.
> *Telephone No. :* Central 7011.
> *Telegraphic Address :* ' Lapweld, Telex.'
> *Warehouse:* 183 Broomloan Road, S.W. 1.
> *Telephone No. :* Govan, 1659.

BIRMINGHAM, 1.   Broad Street Chambers.
> *Telephone No. :* Midland 2700.
> *Telegraphic Address :* ' Lloyds, Telex.'
> *Warehouse :* Nile Street, 15.

LONDON, E. C. 4.   8 Gough Square, Fleet Street.
> *Telephone No. :* Central 3010.
> *Telegraphic Address :* ' Lapweld, London Telex.'
> *Warehouse :* 2–12 Dolland Street, Vauxhall, S.E. 11

LIVERPOOL, 1.   63 Paradise Street.
> *Telephone No. :* Royal 6214.
> *Telegraphic Address :* ' Tubes.'
> *Warehouse :* 63 Paradise Street.

MANCHESTER, 2.   267 Royal Exchange.
> *Telephone No. :* Deansgate 7481.
> *Telegraphic Address :* ' Tubes.'
> *Warehouse :* 6 Commercial Street, Knott Mill, 15.

CARDIFF   West Canal Wharf.
> *Telephone No. :* Cardiff 20401.
> *Telegraphic Address :* ' Tubes.'
> *Warehouse :* West Canal Wharf.

LEEDS, 1.   Sovereign Street.
                  Telephone No.: Leeds 20321.
                  Telegraphic Address : ' Lloyds.'
                  Warehouse : Sovereign Street.

SHEFFIELD, 1.   47 Blonk Street.
                  Telephone No.: Sheffield 22155.
                  Telegraphic Address : ' Tubes.'
                  Warehouse : Blonk Street.

NEWCASTLE-
UPON-TYNE, 1.   3 Royal Arcade, Pilgrim Street.
                  Telephone No.: Newcastle 27107.
                  Telegraphic Address : ' Lapweld.'
                  Warehouse : 507 Shields Road,
                      Walkergate, 6.

SOUTHAMPTON   West Bay Road, New Docks.
                  Telephone No.: Southampton 24688.
                  Telegraphic Address : ' Tubes.'

EXETER   Pearl Assurance House, High Street.
                  Telephone No.: Exeter 58488.
                  Telegraphic Address : ' Tubes.'

ST. AUSTELL   19 Bridge Road.
                  Telephone No.: St. Austell 263.
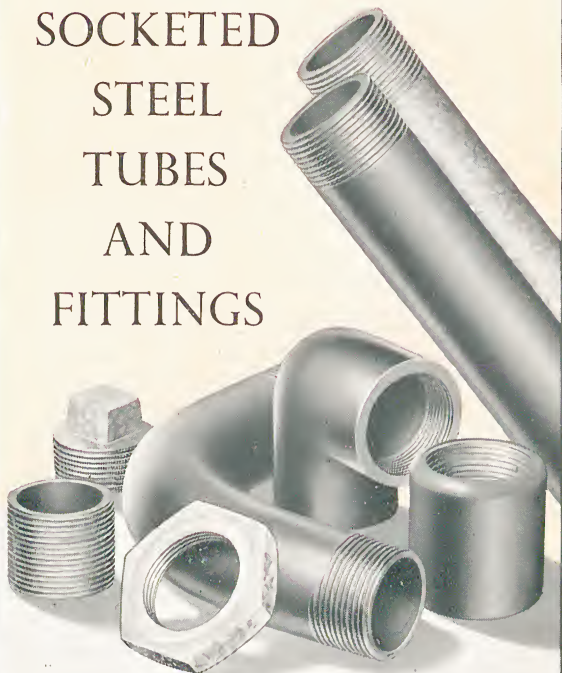

OFFICES AND AGENCIES THROUGHOUT THE
                  WORLD

Contents

Contents (contd.)

SCREWED
AND
SOCKETED
STEEL
TUBES
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FITTINGS

CORRIGENDA

to

POCKET CATALOGUE SECTION I
(Ref. S & L 749)

GROSS PRICE LIST

In view of the revised extras against tubes to B.S. 1387: 1947, which came into operation on 6th December, 1954, the following alterations should be made:—

PAGE 10.   Substitute revised page overleaf.

PAGE 82.   Paragraphs 9 and 11—Alter $5\frac{3}{4}\%$ to $6\frac{1}{2}\%$

Extras and Allowances for Despatches Ex Works

(Home trade only)

SCREWED AND SOCKETED RANDOM LENGTH TUBES

Tubes supplied in lengths within the following ranges, at our option, are charged at list prices less current discounts :—

Sizes $\frac{1}{8}$″ to $\frac{3}{8}$″	..	8 ft. up to 21 ft. inclusive
Sizes $\frac{1}{2}$″ to 6″	..	15 ft. up to 21 ft. inclusive

ALLOWANCES

1. Random length tubes as above :—
   - (a) Screwed without sockets $1\frac{1}{2}$% gross allowance
   - (b) Plain ends, without sockets $2\frac{3}{4}$% gross allowance

EXTRAS

2. Random lengths other than 15–21 ft. inclusive are charged as follows :—

	2 ft. to under 4 ft. gross extra	4 ft. to under 6 ft. gross extra	6 ft. to under 8 ft. gross extra	8 ft. to under 15 ft. gross extra	Over 21 ft. gross extra
Screwed and Socketed	$38\frac{3}{4}$%	$19\frac{1}{4}$%	$9\frac{3}{4}$%	$6\frac{1}{4}$%	$1\frac{3}{4}$%
Screwed (no sockets)	$19\frac{1}{4}$%	$9\frac{3}{4}$%	$6\frac{1}{4}$%	$3\frac{1}{4}$%	Nil
Plain ends	$9\frac{3}{4}$%	$4\frac{1}{2}$%	$3\frac{1}{4}$%	$1\frac{3}{4}$%	*

* Plain ends—Over 21 ft. $1\frac{1}{4}$% gross allowance.

Any restriction within the above ranges may be subject to a further extra.

N.B.—In $\frac{1}{8}$″, $\frac{1}{4}$″ and $\frac{3}{8}$″ sizes, the extras indicated above for lengths 8 ft. to 15 ft. do not apply.

3. EXACT LENGTHS : For tubes in exact lengths, irrespective of length, $6\frac{1}{2}$% gross extra will be charged in addition to the extras for restricted lengths and to any other extras or allowances which may be applicable.
4. COATING : Tubes and fittings coated inside and outside, or outside only with bituminous solution, are charged at $6\frac{1}{2}$% gross extra.
5. Pieces, longscrews and barrel nipples in exact lengths are charged at 13% gross extra.
6. Carriage on orders not amounting to £30 will be to buyer's account.
7. Packages for fittings are not charged.

6th December, 1954.

For Despatches Ex Warehouse Stocks, Special Extras will apply

Introduction

In addition to 'S & L' Screwed and Socketed Steel Tubes to B.S. 1387 this enlarged edition of our Pocket Catalogue also describes 'S & L' Wrought Pipe Fittings to B.S. 1740.

For the convenience of customers, particulars of 'S & L' Steel Butt-Welding Pipe Fittings to B.S. 1965 and of certain other fittings not covered by B.S. 1740 are included in this Catalogue.

The other information contained in previous editions of this Catalogue has been supplemented by a table giving discharges of water from Screwed and Socketed Steel Tubes to B.S. 1387, Class B., either bitumen lined or galvanized.

Where the particulars given in this catalogue have been abstracted, by permission, from British Standards, the reference number of each is quoted. Official copies of the specifications may be purchased from the British Standards Institution, 2, Park Street, London, W. 1.

Screwed & Socketed Tubes & Fittings
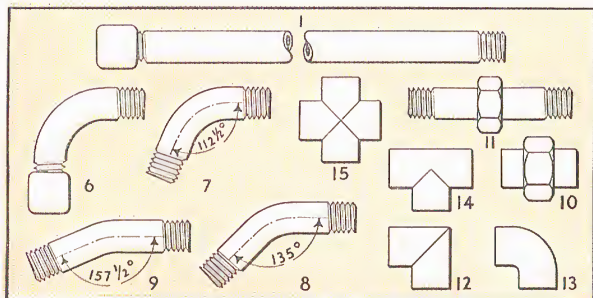
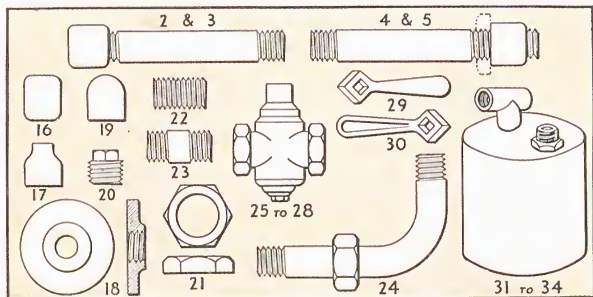| No.	Nominal bore .. .. ins.	⅛ & ¼	⅜	½	¾	1
	TUBES (B.S. 1387–1947)					
1	Tubes, 2 ft. long and over, per ft.	4d.	4½d.	5½d.	6¾d.	9½d.
2	Pieces, 12 to 23½ ins. long each	10d.	11d.	1/1	1/5	1/11
3	,, 4 to 11½ ,, ,, ,,	7d.	8d.	9d.	11d.	1/3
4	Longscrews, 12 to 23½ ins. long,,	11d.	1/–	1/3	1/7	2/2
5	,, 3 to 11½ ,, ,, ,,	8d.	9d.	10d.	1/1	1/5
23	Barrel Nipples	5d.	5d.	6d.	7d.	9d.
6	Bends .. .. .. ,,	8d.	9d.	11d.	1/2	1/7½
7, 8, 9	Springs, not socketed .. ,,	5d.	6d.	7d.	9d.	1/1½
	FITTINGS					
10, 11	¹⁰Socket Union, ¹¹Pipe Union ,,	2/–	2/6	3/–	4/–	5/6
12	Elbows, Square .. ,,	10d.	11d.	1/1	1/3	1/6
13	,, Round .. ,,	11d.	1/–	1/2	1/5	1/8
14	Tees .. .. .. ,,	1/–	1/1	1/3	1/7	1/10
15	Crosses .. .. .. ,,	2/2	2/4	2/9	3/3	4/1
16	Sockets, Plain .. ,,	3d.	3d.	4d.	5d.	6d.
17	,, Diminished .. ,,	4d.	5d.	6d.	7d.	9d.
18	Flanges .. .. .. ,,	9d.	10d.	1/–	1/2	1/4
19	Caps .. .. .. ,,	3½d.	3½d.	5d.	6d.	8d.
20	Plugs .. .. .. ,,	3d.	3d.	4d.	5d.	6d.
21	Backnuts .. .. ,,	2d.	2d.	3d.	3½d.	5d.
22	Nipples .. .. ,,	2d.	2d.	3d.	3½d.	4d.
24	Union Bends .. .. ,,	2/6	3/–	3/9	5/–	6/3
25	C.I. Main Cocks .. ,,					
26	,, With Brass Plugs ,,					
27	C.I. Round Way Cocks ,,			**P R I C E S**		
28	,, ,, with Brass Plugs ,,					
29	Cock Spanners, Wrought ,,					
30	,, ,, Malleable Cast ,,					
31	Syphon Boxes { 1 quart ,,	..	..	22/9	23/–	23/4
32	2 quarts ,,	..	..	..	27/–	27/4
33	3 ,, ,,	..	..	..	32/–	32/4
34	4 ,, ,,	..	..	..	38/–	38/4

See notes on page 10.

1¼	1½	2	2½	3	3½	4	5	6	No.
1/1	1/4½	1/10	2/10	3/3	4/–	4/5	6/–	7/6	1
2/8	3/4	4/9	8/–	10/6	13/6	15/6	24/–	32/6	2
1/8	2/2	3/–	5/3	6/9	9/3	10/9	18/–	25/3	3
2/10	3/9	5/3	9/–	12/–	15/6	17/–	26/6	35/6	4
1/11	2/6	3/6	6/6	8/6	11/6	13/–	20/–	28/–	5
1/–	1/4	1/9	3/–	4/–	6/–	7/–	12/6	20/–	23
2/7½	3/2	5/2	12/–	18/–	25/–	32/6	105/–	150/–	6
1/11½	2/3½	3/11	9/6	14/6	20/–	26/6	93/–	132/–	7, 8, 9
6/9	8/–	10/–	17/6	22/6	27/6	35/–	66/–	105/–	10, 11
2/2	2/7	4/3	9/6	14/–	22/–	28/–	95/–	150/–	12
2/4	2/10	4/8	10/6	16/–	24/–	30/–	95/–	150/–	13
2/6	3/1	5/1	11/6	18/–	26/–	32/–	98/–	155/–	14
5/6	6/7	10/6	22/–	40/–	56/–	66/8	220/–	350/–	15
8d.	10½d.	1/3	2/6	3/6	5/–	6/–	12/–	18/–	16
1/–	1/4	2/–	5/–	7/–	9/–	11/–	35/–	55/–	17
1/9	2/–	2/9	5/–	8/6	10/–	11/6	18/–	27/–	18
1/–	1/3	2/–	4/4	6/–	9/9	10/6	30/–	45/–	19
8d.	10d.	1/3	2/6	4/9	7/–	10/–	30/–	48/–	20
6d.	8d.	1/1	2/3	3/6	4/6	5/6	18/–	26/–	21
6d.	8d.	1/–	2/3	3/6	4/6	5/6	18/–	26/–	22
8/6	10/–	13/6	27/–	37/–	49/–	58/–	100/–	160/–	24
									25
									26
O N		A P P L		I C A T		I O N			27
									28
									29
									30
24/–	24/6	26/3	..	42/6	..	..	..	..	31
28/–	28/6	30/3	35/6	..	..	..	..	..	32
33/6	33/6	35/3	40/6	47/6	55/6	61/6	..	..	33
39/–	39/6	41/3	46/6	53/6	61/6	67/6	..	..	34

See notes on page 10.

Extras and Allowances for Despatches Ex Works

(Home trade only)

SCREWED AND SOCKETED RANDOM LENGTH TUBES

Tubes supplied in lengths within the following ranges, at our option, are charged at list prices less current discounts :—

| Sizes $\frac{1}{8}''$ to $\frac{3}{8}''$ | .. | 8 ft. up to 21 ft. inclusive |
| Sizes $\frac{1}{2}''$ to 6$''$ | .. | 15 ft. up to 21 ft. inclusive |

ALLOWANCES

1. Random length tubes as above :—
   (a) Screwed without sockets $1\frac{1}{2}\%$ gross allowance
   (b) Plain ends, without sockets $2\frac{3}{4}\%$ gross allowance

EXTRAS

2. Random lengths other than 15–21 ft. inclusive are charged as follows :—

	2 ft. to under 4 ft. gross extra	4 ft. to under 6 ft. gross extra	6 ft. to under 8 ft. gross extra	8 ft. to under 15 ft. gross extra	Over 21 ft. gross extra
Screwed and Socketed	$33\frac{1}{4}\%$	$16\frac{3}{4}\%$	$8\frac{1}{2}\%$	$5\frac{1}{2}\%$	$1\frac{1}{2}\%$
Screwed (no sockets)	$16\frac{3}{4}\%$	$8\frac{1}{2}\%$	$5\frac{1}{2}\%$	$2\frac{3}{4}\%$	Nil
Plain ends	$8\frac{1}{2}\%$	4%	$2\frac{3}{4}\%$	$1\frac{1}{2}\%$	*

* Plain ends—Over 21 ft. $1\frac{1}{2}\%$ gross allowance.

Any restriction within the above ranges may be subject to a further extra.

N.B.—In $\frac{1}{8}''$, $\frac{1}{4}''$ and $\frac{3}{8}''$ sizes, the extras indicated above for lengths 8 ft. to 15 ft. do not apply.

3. EXACT LENGTHS : For tubes in exact lengths, irrespective of length, $5\frac{3}{4}\%$ gross extra will be charged in addition to the extras for restricted lengths and to any other extras or allowances which may be applicable.
4. COATING : Tubes and fittings coated inside and outside, or outside only with bituminous solution, are charged at $5\frac{3}{4}\%$ gross extra.
5. Pieces, longscrews and barrel nipples in exact lengths are charged at $11\frac{1}{4}\%$ gross extra.
6. Carriage on orders not amounting to £30 will be to buyer's account.
7. Packages for fittings are not charged.

13th August, 1951.

For Despatches Ex Warehouse Stocks, Special Extras will apply

Specification for Steel Tubes and Tubulars

(ABRIDGED FROM B.S. 1387)

SCOPE

This specification applies to standard screwed and socketed steel tubes of Class A, Class B and Class C thicknesses from $\frac{1}{8}''$ to $6''$ nominal bores inclusive, also to the same tubes if without sockets or if plain at end, and to tubulars.

Tubes

MATERIAL

The tubes shall be manufactured from steel complying with the following requirements :—

		Maximum Percentage		Tensile Strength	Minimum Elongation on 8"
		Sul.	Phos.	Tons/sq. in.	Per cent
Steel (Tubes or Sockets)	..	·06	·06	22–30	18

Sockets may be made from Steel or from Wrought Iron.

DIMENSIONS AND TOLERANCES

The dimensions of the tubes and sockets shall be in accordance with the table on pages 16 and 17, subject to the following tolerances :—

Tubes	Outside diameter	Class A tubes, as cols. 3 and 4 of table on page 16. Class B and Class C tubes, as cols. 5 and 6 of table on page 16.
	Thickness	Class A welded tubes $+10\%$, -8% Class B and Class C tubes Welded .. $\pm 10\%$ Seamless .. $\pm 12\frac{1}{2}\%$
	Weight	On 500 ft. of one size $\pm 4\%$. No single tube shall be below the standard weight by more than $7\frac{1}{2}\%$.
Sockets	Length	As in col. 20 of table on page 17.
	Outside diameter	$\pm 2\frac{1}{2}\%$

JOINTS

Unless otherwise specified, tubes shall be screwed taper thread, and sockets parallel thread, and each tube shall be supplied with one socket. The ends of sockets shall be bevelled sufficiently to prevent damage to the leading thread.

SCREWING

Tubes and sockets shall be screwed to B.S. 21 pipe thread except that on Class A tubes the minimum length of thread shall be reduced to 80% of that shown in col. 7 of Table 3 of B.S. 21, and the outside diameters of the tubes shall lie between the appropriate limits given in the table on page 16.

LENGTHS

(*a*) *Random Lengths,* when screwed and socketed shall be measured by the overall length with one socket screwed on.

Tubes of $\frac{1}{8}$″ nominal bore shall be supplied in lengths of from 10 to 17 feet. Tubes of $\frac{1}{4}$″ to 6″ nominal bore inclusive shall be supplied in lengths of approximately 21 ft.

For orders of over 500 ft. of any one size short random lengths and jointers may be supplied up to the following maximum percentages of the total number of lengths.

	Maximum Percentage	
Nom. Bore	Short Randoms	Jointers
$\frac{1}{4}$″ to 2″ inclusive, 5″ and 6″	5	5
$2\frac{1}{2}$″ to 4″ inclusive	$7\frac{1}{2}$	$7\frac{1}{2}$

(*b*) *Exact Lengths* shall be measured exclusive of the socket and each shall be within $+\frac{1}{4}$″, -0″ of the length specified.

GALVANIZING

The galvanizing of tubes and tubulars shall be in accordance with the requirements specified in B.S. 1387.

HYDRAULIC TEST

Each tube shall be hydraulically tested, after galvanizing if specified galvanized, and after screwing if specified screwed, to a pressure of 700 lb. per sq. in. without showing defects of any kind.

WORKMANSHIP

The tubes shall be cleanly finished, reasonably free from scale and free from cracks, surface flaws, laminations and other defects. All screw threads shall be clean and well-cut. The ends shall be cut cleanly, and square with the axis of the tube.

Tubes not otherwise protected shall be varnished externally throughout their length unless ordered unvarnished.

MARKING FOR INDICATION OF CLASS

All tubes shall be marked with bands of colour as follows :—-

(a) Long Random Lengths, *two bands*, one near each end.

(b) All other lengths, *e.g.* half-random lengths or exact lengths, *one band*, near the unsocketed end if the tube is screwed and socketed.

The colours used shall be :—

Class A	..	..	..	.. Brown
Class B	..	..	..	.. Yellow
Class C	..	..	..	.. Green

PACKING FOR TRANSPORT

Where tubes are bundled for transport, unless otherwise specified by the purchaser, all qualities of tubes shall be packed in bundles of a maximum weight of approximately 2 cwt. The tubes shall be secured together by rope or soft iron wire or other suitable material.

The threads of all tubes shall be effectively covered with a good quality grease or other suitable compound, and each tube above 2″ nominal bore shall have a protecting ring affixed to the unsocketed screwed end.

Tubulars

The tubes from which tubulars are made; their galvanizing, if galvanized; their marking; and their screwing shall comply with the foregoing requirements for straight tubes except that the screwing shall be taper or parallel as detailed in tables 3 to 7 of B.S. 1387.

Tubulars are made from tubes of the following classes :—

Pieces	Classes A, B and C
Barrel Nipples, Bends and Springs ..	Classes B and C
Longscrews and Return Bends ..	Class C

TOLERANCE ON ANGLE OF BENDS

(*a*) A tolerance of $\pm 1\frac{1}{2}°$ shall be allowed on the nominal angle of bends and springs.

(*b*) The ends of return bends shall be parallel within $\pm 1\frac{1}{2}°$.

Nom. Bore of Tube	Approx Outside Diam. of Tube	Outside diameter of Black Tube				Thicknesses					
		Class A		Classes B & C		Class A		Class B		Class C	
		Max.	Min.	Max.	Min.	s.w.g.	in.	s.w.g.	in.	s.w.g.	in.
in.	in.	in.	in.	in.	in.	s.w.g.	in.	s.w.g.	in.	s.w.g.	in.
$\frac{1}{8}$	$\frac{13}{32}$	·396	·383	·412	·387	15	·072	14	·080	12	·104
$\frac{1}{4}$	$\frac{17}{32}$	·532	·518	·550	·525	15	·072	14	·080	12	·104
$\frac{3}{8}$	$\frac{11}{16}$	·671	·656	·688	·663	15	·072	13	·092	11	·116
$\frac{1}{2}$	$\frac{27}{32}$	·841	·825	·859	·834	14	·080	12	·104	10	·128
$\frac{3}{4}$	$1\frac{1}{16}$	1·059	1·041	1·075	1·050	13	·092	11	·116	9	·144
1	$1\frac{11}{32}$	1·328	1·309	1·351	1·320	12	·104	10	·128	8	·160
$1\frac{1}{4}$	$1\frac{11}{16}$	1·670	1·650	1·692	1·661	12	·104	9	·144	7	·176
$1\frac{1}{2}$	$1\frac{29}{32}$	1·903	1·882	1·924	1·893	11	·116	8	·160	6	·192
2	$2\frac{3}{8}$	2·370	2·347	2·403	2·358	11	·116	8	·160	6	·192
$2\frac{1}{2}$	3	2·991	2·960	3·021	2·971	10	·128	7	·176	5	·212
3	$3\frac{1}{2}$	3·491	3·460	3·526	3·471	10	·128	7	·176	5	·212
$3\frac{1}{2}$	4	3·981	3·950	4·021	3·961	9	·144	7	·176	5	·212
4	$4\frac{1}{2}$	4·481	4·450	4·526	4·461	9	·144	7	·176	5	·212
5	$5\frac{1}{2}$	—	—	5·536	5·461	—	—	7	·176	5	·212
6	$6\frac{1}{2}$	—	—	6·541	6·461	—	—	7	·176	5	·212
1	2	3	4	5	6	7	8	9	10	11	12

Pounds per foot of Steel Tubes

with B.S. 1387

Weights per foot of Black Tube						Ordinary Sockets*		Approx Outside Diam. of Tube	Nom. Bore of Tube
Plain Ends			Screwed and Socketed			Approx Outside Diam.	Minimum Length		
Class A	Class B	Class C	Class A	Class B	Class C				
lb.	lb.	lb.	lb.	lb.	lb.	in.	in.	in.	in.
·244	·273	·328	·247	·276	·331	$\frac{19}{32}$	$\frac{3}{4}$	$\frac{13}{32}$	$\frac{1}{8}$
·348	·391	·482	·351	·393	·484	$\frac{3}{4}$	1	$\frac{17}{32}$	$\frac{1}{4}$
·455	·573	·693	·459	·577	·696	$\frac{29}{32}$	$1\frac{1}{8}$	$\frac{11}{16}$	$\frac{5}{8}$
·643	·825	·982	·650	·831	·987	$1\frac{3}{32}$	$1\frac{1}{2}$	$\frac{27}{32}$	$\frac{1}{2}$
·941	1·173	1·413	·951	1·182	1·421	$1\frac{11}{32}$	$1\frac{5}{8}$	$1\frac{1}{16}$	$\frac{3}{4}$
1·349	1·651	2·009	1·364	1·664	2·020	$1\frac{21}{32}$	$1\frac{7}{8}$	$1\frac{11}{32}$	1
1·729	2·357	2·821	1·751	2·375	2·836	$2\frac{1}{32}$	$2\frac{1}{8}$	$1\frac{11}{16}$	$1\frac{1}{4}$
2·201	2·988	3·520	2·233	3·015	3·544	$2\frac{9}{32}$	$2\frac{1}{4}$	$1\frac{29}{32}$	$1\frac{1}{2}$
2·779	3·795	4·488	2·827	3·836	4·524	$2\frac{15}{32}$	$2\frac{1}{2}$	$2\frac{3}{8}$	2
3·893	5·301	6·304	3·979	5·375	6·370	$3\frac{7}{16}$	$2\frac{3}{4}$	3	$2\frac{1}{2}$
4·577	6·246	7·442	4·700	6·354	7·540	4	3	$3\frac{1}{2}$	3
5·878	7·172	8·557	6·006	7·288	8·660	$4\frac{1}{2}$	$3\frac{1}{4}$	4	$3\frac{1}{2}$
6·647	8·117	9·695	6·831	8·286	9·847	$5\frac{1}{16}$	$3\frac{1}{2}$	$4\frac{1}{2}$	4
—	10·006	11·971	—	10·262	12·205	$6\frac{1}{8}$	$3\frac{3}{4}$	$5\frac{1}{2}$	5
—	11·891	14·241	—	12·301	14·625	$7\frac{1}{4}$	$3\frac{3}{4}$	$6\frac{1}{2}$	6
13	14	15	16	17	18	19	20	21	22

* Longscrew sockets may be $\frac{1}{8}$ in. shorter than ordinary sockets, and shall be suitably faced on the end against which the backnut abuts.

Nom. Bore of Tube	Approx Outside Diam. of Tube	Outside Diameter of Black Tube				Thicknesses					
		Class A		Classes B & C		Class A		Class B		Class C	
		Max.	Min.	Max.	Min.						
in.	mm.	mm.	mm.	mm.	mm.	s.w.g.	mm.	s.w.g.	mm.	s.w.g.	mm.
⅛	10·319	10·058	9·728	10·465	9·830	15	1·829	14	2·032	12	2·642
¼	13·494	13·513	13·157	13·970	13·335	15	1·829	14	2·032	12	2·642
⅜	17·462	17·043	16·662	17·475	16·840	15	1·829	13	2·337	11	2·946
½	21·431	21·361	20·955	21·819	21·184	14	2·032	12	2·642	10	3·251
¾	26·988	26·899	26·441	27·305	26·670	13	2·337	11	2·946	9	3·658
1	34·131	33·731	33·249	34·315	33·528	12	2·642	10	3·251	8	4·064
1¼	42·862	42·418	41·910	42·977	42·189	12	2·642	9	3·658	7	4·470
1½	48·419	48·336	47·803	48·870	48·082	11	2·946	8	4·064	6	4·877
2	60·325	60·198	59·614	61·036	59·893	11	2·946	8	4·064	6	4·877
2½	76·200	75·971	75·184	76·733	75·463	10	3·251	7	4·470	5	5·385
3	88·900	88·671	87·884	89·560	88·163	10	3·251	7	4·470	5	5·385
3½	101·600	101·117	100·330	102·133	100·609	9	3·658	7	4·470	5	5·385
4	114·300	113·817	113·030	114·960	113·309	9	3·658	7	4·470	5	5·385
5	139·700	—	—	140·614	138·709	—	—	7	4·470	5	5·385
6	165·100	—	—	166·141	164·109	—	—	7	4·470	5	5·385
1	2	3	4	5	6	7	8	9	10	11	12

Dimensions and Weights

Kg. per metre of Black Tube						Ordinary Sockets*		Approx. Outside Diam. of Tube	Nom. Bore of Tube
Plain Ends			Screwed and Socketed			Approx. Outside Diam.	Minimum Length		
Class A	Class B	Class C	Class A	Class B	Class C				
kg.	kg.	kg.	kg.	kg.	kg.	mm.	mm.	mm.	in.
·363	·406	·488	·368	·411	·493	15·081	19·050	10·319	$\frac{1}{8}$
·518	·582	·717	·522	·585	·720	19·050	25·400	13·494	$\frac{1}{4}$
·677	·853	1·031	·683	·859	1·036	23·019	28·575	17·462	$\frac{3}{8}$
·957	1·228	1·461	·967	1·237	1·469	27·781	38·100	21·431	$\frac{1}{2}$
1·400	1·746	2·103	1·415	1·759	2·115	34·131	41·275	26·988	$\frac{3}{4}$
2·008	2·457	2·990	2·030	2·476	3·006	42·069	47·625	34·131	1
2·573	3·508	4·198	2·606	3·534	4·220	51·594	53·975	42·862	1$\frac{1}{4}$
3·275	4·447	5·238	3·323	4·487	5·274	57·944	57·150	48·419	1$\frac{1}{2}$
4·136	5·648	6·679	4·207	5·709	6·732	70·644	63·500	60·325	2
5·793	7·889	9·381	5·921	7·999	9·480	87·313	69·850	76·200	2$\frac{1}{2}$
6·811	9·295	11·075	6·994	9·456	11·221	101·600	76·200	88·900	3
8·747	10·673	12·734	8·938	10·846	12·887	114·300	82·550	101·600	3$\frac{1}{2}$
9·892	12·079	14·428	10·166	12·331	14·654	128·588	88·900	114·300	4
—	14·891	17·815	—	15·271	18·163	155·575	95·250	139·700	5
—	17·696	21·913	—	18·306	21·764	184·150	95·250	165·100	6
13	14	15	16	17	18	19	20	21	22

* Longscrew sockets may be $\frac{1}{8}$ in. (3 mm.) shorter than ordinary sockets.

Feet per ton of Steel Tubes to B.S. 1387

Nom. Bore	Feet per ton					
	Plain End			Screwed and Socketed		
in.	Class A	Class B	Class C	Class A	Class B	Class C
$\frac{1}{8}$	9180	8205	6829	9069	8116	6767
$\frac{1}{4}$	6437	5729	4647	6382	5700	4628
$\frac{3}{8}$	4923	3909	3232	4880	3882	3218
$\frac{1}{2}$	3484	2715	2281	3446	2696	2270
$\frac{3}{4}$	2380	1910	1585	2355	1895	1576
1	1660	1357	1115	1642	1346	1109
$1\frac{1}{4}$	1296	950	794	1279	943	790
$1\frac{1}{2}$	1018	750	636	1003	743	632
2	806	590	499	792	584	495
$2\frac{1}{2}$	575	423	355	563	417	352
3	489	359	301	477	353	297
$3\frac{1}{2}$	381	312	262	373	307	259
4	337	276	231	328	270	227
5	—	224	187	—	218	184
6	—	188	157	—	182	153

Standard Bundles of Screwed and Socketed Steel Tubes

Nom. Bore	Approx. Length per Bundle	Number of Tubes per Bundle	Approximate Weight per Bundle		
			Class A	Class B	Class C
in.	ft.		lb.	lb.	lb.
$\frac{1}{4}$	420	20	150	165	205
$\frac{3}{8}$	315	15	145	185	220
$\frac{1}{2}$	231	11	150	190	230
$\frac{3}{4}$	147	7	140	175	210
1	105	5	145	175	215
*$1\frac{1}{4}$	63	3	110	150	180
*$1\frac{1}{2}$	63	3	140	190	225
*2	63	3	180	245	285

Metric Equivalents

Nom. Bore	Approx. Length per Bundle	Number of Tubes per Bundle	Approximate Weight per Bundle		
			Class A	Class B	Class C
in.	metres		kg.	kg.	kg.
$\frac{1}{4}$	128	20	68	75	93
$\frac{3}{8}$	96	15	66	84	100
$\frac{1}{2}$	70·4	11	68	86	104
$\frac{3}{4}$	44·8	7	64	79	95
1	32·0	5	66	79	96
*$1\frac{1}{4}$	19·2	3	50	68	82
*$1\frac{1}{2}$	19·2	3	64	86	102
*2	19·2	3	82	111	130

Orders placed by length, should, if possible, be for the bundle lengths given above or for multiples of those lengths. Similarly, orders placed by weight should be for the bundle weights given above or for multiples of those weights.

* NOTE:—These sizes are bundled for export only.

Diagram showing difference between B.S. 21 Joint for Class B and C and Modified Joint for Class A Tubes

Fig. 1
Pipe thread to B.S. 21 for Class B and Class C Tubes

Fig. 2
Pipe thread for Class A Tubes

Fig. 3
Taper/Parallel Joints to B.S. 21 for Class B and Class C Tubes

Fig. 4
Taper/Parallel Joints for Class A Tubes

Screwed Joints

Unless otherwise specified all gas list tubes are screwed with taper pipe threads to B.S. 21 except for the modifications in diameter, and in the length of thread on Class A tubes, permitted by B.S. 1387. B.S. 1387 provides that the modified joint on Class A tubes may make use of black threads from and beyond the gauge plane and that the length of useful thread on Class A tubes shall be reduced to 80% of that shown in B.S. 21, Table 3, col. 7. Experience has shown that the permissible black threads are in no way detrimental. The difference between joints on Class A and on Class B tubes is shown in the illustrations opposite.

Standard pipefitters' dies can be used to screw Class A tubes, but care must be taken when screwing them by hand and the use of parallel screwing is not recommended.

Standard Sockets and Standard Fittings screwed to B.S. 21 parallel thread are used in conjunction with Class A tubes, but Class A tubes are not intended for use with screwed-on flanges.

Particulars of Screwing of Tubes

Nom. Bore in.	Approx. Outside Diam. in.	Number of Threads per in.	Approx. Length of Useful Thread			
			Class A		Classes B & C	
			in.	turns	in.	turns
$\frac{1}{8}$	$\frac{13}{32}$	28	$\frac{13}{64}$	$5\frac{3}{4}$	$\frac{1}{4}$	$7\frac{1}{4}$
$\frac{1}{4}$	$\frac{17}{32}$	19	$\frac{5}{16}$	$5\frac{3}{4}$	$\frac{3}{8}$	$7\frac{1}{4}$
$\frac{3}{8}$	$\frac{11}{16}$	19	$\frac{5}{16}$	6	$\frac{13}{32}$	$7\frac{1}{2}$
$\frac{1}{2}$	$\frac{27}{32}$	14	$\frac{13}{32}$	$5\frac{3}{4}$	$\frac{17}{32}$	
$\frac{3}{4}$	$1\frac{1}{16}$	14	$\frac{15}{32}$	$6\frac{1}{2}$	$\frac{9}{16}$	8
1	$1\frac{11}{32}$	11	$\frac{17}{32}$	$5\frac{3}{4}$	$\frac{21}{32}$	$7\frac{1}{4}$
$1\frac{1}{4}$	$1\frac{11}{16}$	11	$\frac{19}{32}$	$6\frac{1}{2}$	$\frac{3}{4}$	$8\frac{1}{4}$
$1\frac{1}{2}$	$1\frac{29}{32}$	11	$\frac{19}{32}$	$6\frac{1}{2}$	$\frac{3}{4}$	$8\frac{1}{4}$
2	$2\frac{3}{8}$	11	$\frac{23}{32}$	8	$\frac{29}{32}$	10
$2\frac{1}{2}$	3	11	$\frac{27}{32}$	$9\frac{1}{4}$	$1\frac{1}{16}$	$11\frac{1}{2}$
3	$3\frac{1}{2}$	11	$\frac{15}{16}$	$10\frac{1}{4}$	$1\frac{3}{16}$	13
$3\frac{1}{2}$	4	11	1	11	$1\frac{1}{4}$	$13\frac{1}{2}$
4	$4\frac{1}{2}$	11	$1\frac{1}{8}$	$12\frac{1}{2}$	$1\frac{13}{32}$	$15\frac{1}{2}$
5	$5\frac{1}{2}$	11	—	—	$1\frac{19}{32}$	$17\frac{1}{4}$
6	$6\frac{1}{2}$	11	—	—	$1\frac{19}{32}$	$17\frac{1}{4}$

Notes on Screwing

IN THIS CASE EFFECTIVE CUTTING ANGLE SAME AS LIP ANGLE

EFFECTIVE CUTTING ANGLE

LIP ANGLE

CHIP SPACE

CLEARANCE

CHIP SPACE

CLEARANCE

...R WITH CUTTING ...OIN... OFF CENTRE LINE

CHASER WITH CUTTING POINT ON CENTRE LINE

THROAT ANGLE

POLISH ON DIE THREADS AFTER CUTTING WITH CORRECT SETTING
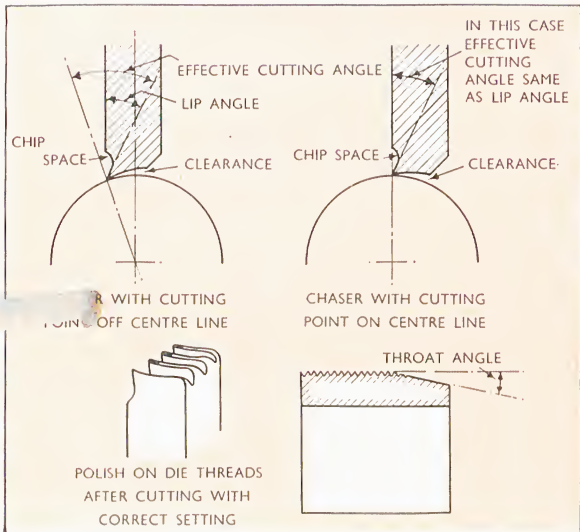
To obtain satisfactory results the screwing die should have certain characteristics, which may be summarized as follows :—

  (1) Lip angle for screwing hard steel 15° to 20°.
       Lip angle for screwing soft steel 22° to 25°.
       Lip angle for general purposes average $22\frac{1}{2}$°.

  (2) Throat angle $12\frac{1}{2}$° to 15°.

  (3) Chip space should provide an even curve for the chip to follow as it comes off the tube.

  (4) Clearance. A screwing die with correct clearance will show $\frac{1}{16}''$ to $\frac{3}{32}''$ of polished thread where it has been in contact with the thread of the product ; see illustrations.

Lubrication plays an important part in cutting efficiency and an ample flow of lubricant is at all times essential. Soluble oils or suds are preferable to straight cutting oils.

Recommended Working Pressures for Gas List Tubes with Screwed and Socketed Joints

The pressures tabulated are based on tubes screwed taper thread and used with sockets screwed parallel thread. *The tubes can be used for higher pressures than those tabulated, or for special working conditions, with other suitable types of joint.*

Users should consult any existing regulations of the appropriate authorities or undertakings as to the class of tube to be used for their purpose.

| Nom. Bore | In British units—lb. per sq. in. | | | | | In metric units—kg. per sq. cm. | | | | |
| | Water | | | Saturated steam or Compressed air | | Water | | | Saturated steam or Compressed air | |
in.	Class A	Class B	Class C	Class B	Class C	Class A	Class B	Class C	Class B	Class C
⅛	150	300	350	150	175	10·5	21·1	24·6	10·5	12·3
¼	150	300	350	150	175	10·5	21·1	24·6	10·5	12·3
⅜	150	300	350	150	175	10·5	21·1	24·6	10·5	12·3
½	150	300	350	150	175	10·5	21·1	24·6	10·5	12·3
¾	150	300	350	150	175	10·5	21·1	24·6	10·5	12·3
1	150	300	350	150	175	10·5	21·1	24·6	10·5	12·3
1¼	125	250	300	125	150	8·8	17·6	21·1	8·8	10·5
1½	125	250	300	125	150	8·8	17·6	21·1	8·8	10·5
2	100	200	250	100	125	7·0	14·1	17·6	7·0	8·8
2½	100	200	250	100	125	7·0	14·1	17·6	7·0	8·8
3	100	200	250	100	125	7·0	14·1	17·6	7·0	8·8
3½	80	150	200	80	100	5·6	10·5	14·1	5·6	7·0
4	80	150	200	80	100	5·6	10·5	14·1	5·6	7·0
5	—	150	200	80	100	—	10·5	14·1	5·6	7·0
6	—	125	150	60	80	—	8·8	10·5	4·2	5·6

NOTE.—Longscrews, although permissible for low pressures, are not recommended for the higher pressures, or for services in which there are wide variations of temperature.

Special Protections

Apart from painting and oiling, hot dip galvanizing is the general purpose protection for screwed and socketed steel tubes. For some types of soil and some types of water, however, a bituminous protection may be preferable and we are in a position to supply the following special protections :—

OUTSIDE PROTECTION FOR WATER OR GAS SERVICES "SECURITY" WRAPPING

This consists of a coating of bitumen reinforced by a spiral wrapping of glass tissue impregnated with bitumen.

To complete the outside protection at the joints and at fittings, we recommend our " Security " joint bandage. A free supply of " Security " joint bandage, with application instructions, will be sent on request with each consignment of " Security " wrapped service pipes.

NOTE.—Galvanized pipes can be supplied " Security " wrapped.

INSIDE PROTECTION FOR COLD WATER SERVICES

This consists of a bitumen lining which extends into the socket.

We send with each consignment of tubes a suitable compound (with application instructions) which enables the inside protection to be made continuous when the tubes are being jointed together.

INSIDE PROTECTION FOR GAS SERVICES

For the inside protection of gas service pipes, when not galvanized, a coating of boiled linseed oil or of red lead paint can be supplied, since bitumen is unsuitable.

The above special bituminous protections have been evolved from similar protections which have been supplied by us for many years on water mains.

We shall be pleased to supply leaflets on the subject of these special bituminous protections on request.

Pieces, Longscrews and Double Longscrews to B.S. 1387

Nos 2 & 3. Nos 4 & 5.
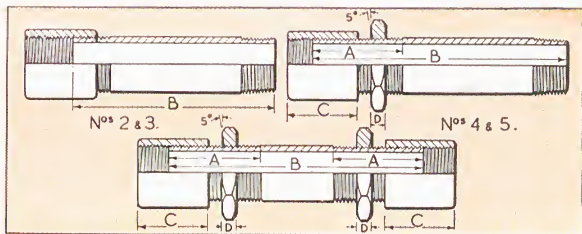
	PIECES AND LONGSCREWS				LONGSCREWS			
Nom. Bore	Approximate Standard Length B				Min. Length of Faced Socket C	Min. Effect. Length of Long-screw A	Hexagonal Backnut	
							Width across Flats	Thickness D
in.	in.	in.	in.	in.	in.	in.	in.	in.
$\frac{1}{8}$	4	6	8	10	$\frac{5}{8}$	$1\frac{1}{16}$	$\frac{3}{4}$	$\frac{1}{4}$
$\frac{1}{4}$	4	6	8	10	$\frac{7}{8}$	$1\frac{11}{32}$	$\frac{7}{8}$	$\frac{1}{4}$
$\frac{3}{8}$	4*	6	8	10	1	$1\frac{13}{16}$	$1\frac{1}{16}$	$\frac{9}{32}$
$\frac{1}{2}$	4*	6	8	10	$1\frac{3}{8}$	$2\frac{1}{32}$	$1\frac{1}{4}$	$\frac{5}{16}$
$\frac{3}{4}$	4*	6	8	10	$1\frac{1}{2}$	$2\frac{3}{16}$	$1\frac{7}{16}$	$\frac{11}{32}$
1	4*	6	8	10	$1\frac{3}{4}$	$2\frac{1}{2}$	$1\frac{13}{16}$	$\frac{3}{8}$
$1\frac{1}{4}$	6*	8	10	12	2	$2\frac{7}{8}$	$2\frac{3}{8}$	$\frac{7}{16}$
$1\frac{1}{2}$	6*	8	10	12	$2\frac{1}{8}$	$3\frac{1}{32}$	$2\frac{1}{2}$	$\frac{15}{32}$
2	6*	8*	10	12	$2\frac{3}{8}$	$3\frac{11}{32}$	$3\frac{1}{16}$	$\frac{17}{32}$
$2\frac{1}{2}$	6*	8*	10	12	$2\frac{5}{8}$	$3\frac{7}{8}$	$3\frac{13}{16}$	$\frac{11}{16}$
3	8*	10*	12	16	$2\frac{7}{8}$	$4\frac{1}{4}$	$4\frac{1}{2}$	$\frac{13}{16}$
$3\frac{1}{2}$	8*	10*	12	16	$3\frac{1}{8}$	$4\frac{1}{2}$	$5\frac{1}{8}$	$\frac{13}{16}$
4	8*	10*	12	16	$3\frac{3}{8}$	$4\frac{13}{16}$	$5\frac{1}{2}$	$\frac{7}{8}$
5	10*	12*	16	20	$3\frac{3}{8}$	$5\frac{1}{8}$	$6\frac{3}{4}$	$\frac{15}{16}$
6	10*	12*	16	20	$3\frac{5}{8}$	$5\frac{1}{8}$	$7\frac{3}{4}$	1

* Double longscrews cannot be supplied in these lengths.
Longscrews and pieces are always sent assorted, i.e. up to $11\frac{1}{2}$ in. long, unless otherwise specified on order. Unless specially ordered otherwise, one backnut is sent with each longscrew and is charged at list price. Longscrews cannot conveniently be made shorter than twice the length of sockets.
Pieces are made from Class A, Class B and Class C tubes.
Longscrews are made only from Class C tubes.
For List Prices and Notes, see pages 8 to 10.
For Notes applicable to Nuts, see page 60.

Barrel Nipples to B.S. 1387

No. 23
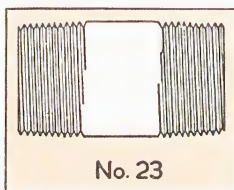
Nominal Bore in.	Approximate Outside Diameter in.	Approximate Length in.
$\frac{1}{8}$	$\frac{13}{32}$	$1\frac{3}{8}$
$\frac{1}{4}$	$\frac{17}{32}$	$1\frac{3}{4}$
$\frac{3}{8}$	$\frac{11}{16}$	$1\frac{3}{4}$
$\frac{1}{2}$	$\frac{27}{32}$	$2\frac{1}{4}$
$\frac{3}{4}$	$1\frac{1}{16}$	$2\frac{1}{4}$
1	$1\frac{11}{32}$	$2\frac{1}{2}$
$1\frac{1}{4}$	$1\frac{11}{16}$	3
$1\frac{1}{2}$	$1\frac{29}{32}$	3
2	$2\frac{3}{8}$	3
$2\frac{1}{2}$	3	$3\frac{1}{2}$
3	$3\frac{1}{2}$	$3\frac{1}{2}$
$3\frac{1}{2}$	4	4
4	$4\frac{1}{2}$	4
5	$5\frac{1}{2}$	$4\frac{1}{2}$
6	$6\frac{1}{2}$	5

Barrel Nipples are made only from Class B or Class C tubes.

Barrel Nipples of other lengths than those specified in the above table can be obtained when specially ordered.

For running nipples and close taper nipples see page 61.

For List Prices and Notes, see pages 8 to 10.

Bends and Springs to B.S. 1387

No 6.

No 7.   No 8.   No 9.
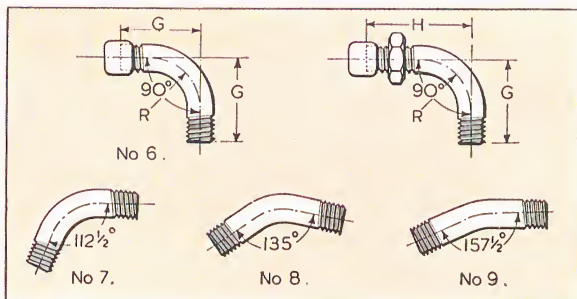
Nom. Bore in.	Approximate Centre to Face		Approx. Radius	Approximate Length of Tube	
	G in.	H in.	R in.	Bends and Springs in.	Longscrew Bends in.
⅛	2⅛	2⅞	1½	3¾	4⅜
¼	2½	3¼	1⅝	4¼	5
⅜	2⅝	3⅞	1⅞	4⅞	5⅞
½	3¼	4½	2¼	5½	6¾
¾	4	5¼	2⅞	6¾	8
1	4¾	6½	3½	8	9¾
1¼	6	7⅝	4¼	10⅜	11⅞
1½	6¾	8½	5	11⅞	13¼
2	8	10	6¼	13½	15¼
2½	9¾	12⅛	7¾	16¼	18⅞
3	11½	14⅛	9¼	19	21⅞
3½	13¼	16	10⅝	22	24⅞
4	15	18	12½	24¾	27¾
5	21	24⅛	18	34¼	37⅛
6	24½	28	21	40	43½

Bends and Springs are made only from Class B or Class C tubes.

Longscrew Bends are charged at the same list prices as ordinary bends (No. 6), see pages 8 and 9, but are subject to a gross percentage extra. Longscrew bends are made only from Class C tube.

Bends screwed not socketed are charged at list price of springs less current discount for screwed and socketed tubes.

Unless otherwise specified springs are sent assorted of the three angles shown above.

Springs of special angles are charged at extra prices.

For List Prices and Notes, see pages 8 to 10.

Return (or Double) Bends to B.S. 1387
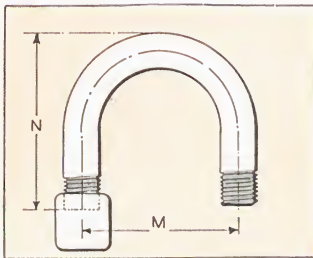
Nominal Bore in.	Approximate Centres M in.	Approximate Back to Face N in.
$\frac{1}{8}$	$1\frac{3}{4}$	2
$\frac{1}{4}$	2	$2\frac{1}{2}$
$\frac{3}{8}$	$2\frac{1}{2}$	$2\frac{3}{4}$
$\frac{1}{2}$	$3\frac{1}{2}$	4
$\frac{3}{4}$	4	$4\frac{3}{4}$
1	$4\frac{1}{2}$	$5\frac{1}{2}$
$1\frac{1}{4}$	5	6
$1\frac{1}{2}$	$6\frac{1}{2}$	7
2	$7\frac{1}{2}$	$8\frac{1}{4}$
$2\frac{1}{2}$	12	$11\frac{1}{2}$
3	14	13
$3\frac{1}{2}$	16	$14\frac{1}{4}$
4	18	$15\frac{3}{4}$
5	30	$22\frac{3}{4}$
6	36	$27\frac{1}{4}$

Return Bends are made from Class C Tubes, and are charged at special rates. They can also be supplied of special dimensions to specification.

Specification for Wrought Pipe Fittings, Iron and Steel (Screwed B.S.P. Thread)

SCOPE

This specification applies to standard welded and seamless wrought steel and wrought iron pipe fittings of nominal sizes from ⅛″ to 6″ inclusive, for use with steel tubes to B.S. 1387.

MATERIAL

The fittings shall be manufactured from materials complying with the following requirements :—

Material	Tensile Strength Tons/sq. in.	Minimum Elongation on 8 in., per cent.
Steel	22 to 30	18
Wrought Iron	18 to 24	8

Where steel fittings are welded during manufacture the steel shall show on analysis not more than 0.06 per cent of sulphur and 0.06 per cent of phosphorus. Wrought iron fittings shall show on analysis not more than 0.15 per cent of manganese and 0.03 per cent of sulphur.

DIMENSIONS AND TOLERANCES

The outside diameters of the fittings shall be in accordance with the table on page 38. The dimensions of the fittings shall be as given in the tables on pages 41 to 72, subject to the tolerances specified.

SCREWING

Threads for the screwed ends of fittings shall comply with the appropriate requirements of B.S. 21 and the dimensions shall be in accordance with the table on page 39.

Female threads on fittings shall be parallel and male threads (except on running nipples and collars of unions) shall be taper.

The axes of screw threads shall be coincident with the true axes of the fitting to $\frac{1}{16}''$ per foot on the run and $\frac{3}{32}''$ per foot on the branch.

GALVANIZING

The galvanizing of fittings shall be in accordance with the requirements specified in B.S. 1740.

PRESSURE TESTS

Each fitting after being screwed and before any protective coating other than galvanizing has been applied shall be capable of withstanding without showing signs of leakage :—

(*a*) An internal hydraulic pressure of :
      Lightweight fittings ..   500 lb./sq. in.
      Heavyweight fittings ..   700 lb./sq. in.

(*b*) An internal air pressure of 100 lb./sq. in. whilst the fitting is completely immersed in water or light oil.

MARKING

If not galvanized, heavyweight fittings shall be painted red to distinguish them from lightweight fittings. If galvanized, heavyweight fittings shall be marked with a dab of red paint.

Rules for Reading Sizes of Tees

Fig. 5

Fig. 6

Fig. 7
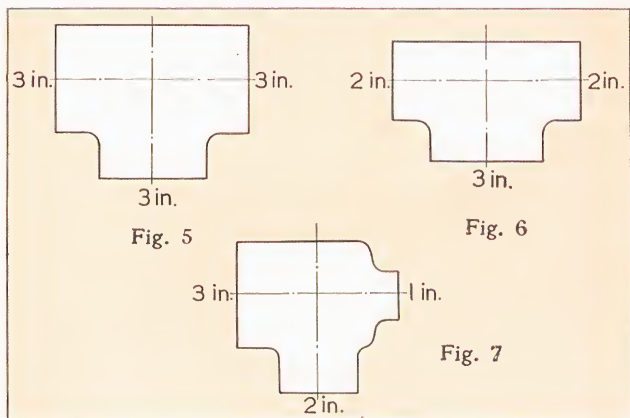
(1) When one size is specified it applies to both ends of the barrel and to the branch : *e.g.* a ' 3″ Tee,' Fig. 5.

(2) When two sizes are specified, the first applies to both ends of the barrel, the second to the branch : *e.g.* a ' 2″ × 3″ Tee,' Fig. 6.

(3) When three sizes are specified, the first two apply to the ends of the barrel the larger end being specified first, and the third to the branch : *e.g.* a ' 3″ × 1″ × 2″ Tee,' Fig. 7.

Rules for Reading Sizes of Crosses

Fig. 8

Fig. 9

Fig. 10
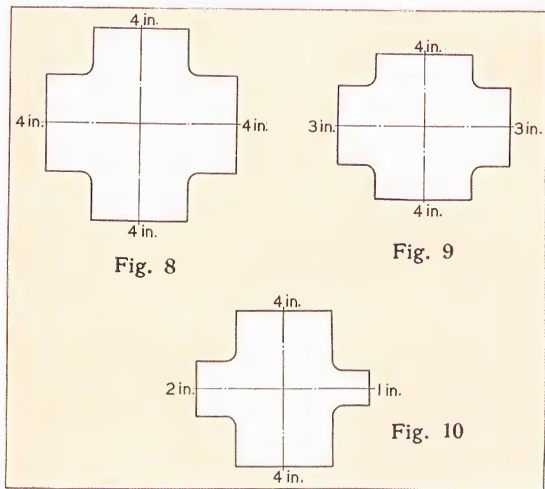
(1) When one size is specified, it applies to all ends of the cross: *e.g.* a ' 4″ Cross,' Fig. 8.

(2) When two sizes are specified, the first applies to one pair of opposite ends, the second to the other pair, the larger pair being specified first: *e.g.* a ' 4″×3″ Cross,' Fig. 9.

(3) When four sizes are specified, the first two apply to one pair of opposite ends, and the second two to the other pair, the larger size being specified first: *e.g.* a ' 4″×4″×2″×1″ Cross,' Fig. 10.

NOTE.—*Three sizes should never be used to describe a Cross.*

Rules for Reading
Sizes of Side Outlet Fittings

Fig. 11

Fig. 12

Fig. 13
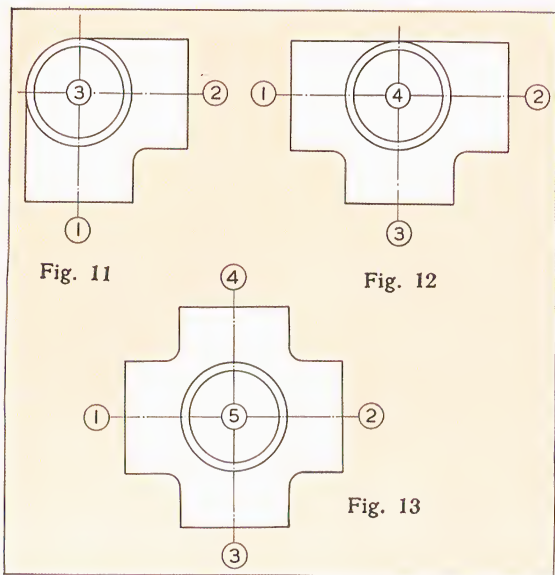
Where fittings have a side outlet, their ends should be specified as for normal fittings and then the size of the side outlet should be given, see Figs. 11, 12 and 13.

For unequal fittings the purchaser should send a sketch with his enquiry and order to indicate whether the side outlet is left or right hand in relation to the other outlets.

Outside Diameters of Fittings

All dimensions are in inches

Nominal Size	Ends Screwed Female				Ends Screwed Male
	Sockets and Caps		Other Fittings		
	Approx.	Min.	Light-weight Min.	Heavy-weight Min.	Behind Threads Min.
$\frac{1}{8}$	$\frac{19}{32}$	·579	$\frac{19}{32}$	$\frac{21}{32}$	·387
$\frac{1}{4}$	$\frac{3}{4}$	·731	$\frac{23}{32}$	$\frac{25}{32}$	·525
$\frac{3}{8}$	$\frac{29}{32}$	·883	$\frac{7}{8}$	$\frac{15}{16}$	·663
$\frac{1}{2}$	$1\frac{3}{32}$	1·067	$1\frac{1}{16}$	$1\frac{1}{8}$	·834
$\frac{3}{4}$	$1\frac{11}{32}$	1·310	$1\frac{9}{32}$	$1\frac{11}{32}$	1·050
1	$1\frac{21}{32}$	1·615	$1\frac{9}{16}$	$1\frac{5}{8}$	1·320
$1\frac{1}{4}$	$2\frac{1}{32}$	1·980	$1\frac{15}{16}$	2	1·661
$1\frac{1}{2}$	$2\frac{9}{32}$	2·224	$2\frac{3}{16}$	$2\frac{1}{4}$	1·893
2	$2\frac{25}{32}$	2·711	$2\frac{11}{16}$	$2\frac{3}{4}$	2·358
$2\frac{1}{2}$	$3\frac{7}{16}$	3·352	$3\frac{5}{16}$	$3\frac{13}{32}$	2·971
3	4	3·900	$3\frac{7}{8}$	$3\frac{15}{16}$	3·471
$3\frac{1}{2}$	$4\frac{1}{2}$	4·388	$4\frac{3}{8}$	$4\frac{7}{16}$	3·961
4	$5\frac{1}{16}$	4·936	$4\frac{7}{8}$	$4\frac{31}{32}$	4·461
5	$6\frac{1}{8}$	5·972	$5\frac{15}{16}$	$6\frac{1}{16}$	5·461
6	$7\frac{1}{4}$	7·069	7	$7\frac{1}{8}$	6·461

Screwed Ends
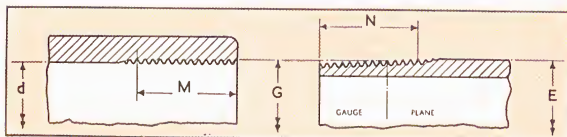
All dimensions are in inches

Nom. Size	Min. outside diam. of body behind male thread E	Max. inside diam. of body behind female thread d	Gauge diam. G	Number of threads per in.	Min. length of useful thread M	Basic length of useful thread N
⅛	·387	·337	·383	28	·2902	·2545
¼	·525	·451	·518	19	·4340	·3814
⅜	·663	·589	·656	19	·4473	·3947
½	·834	·734	·825	14	·5892	·5178
¾	1·050	·950	1·041	14	·6428	·5714
1	1·320	1·193	1·309	11	·7500	·6591
1¼	1·661	1·534	1·650	11	·8409	·7500
1½	1·893	1·766	1·882	11	·8409	·7500
2	2·358	2·231	2·347	11	1·0113	·9204
2½	2·971	2·844	2·960	11	1·1875	1·0511
3	3·471	3·344	3·460	11	1·3125	1·1761
3½	3·961	3·834	3·950	11	1·3750	1·2386
4	4·461	4·334	4·450	11	1·5455	1·4091
5	5·461	5·334	5·450	11	1·7159	1·5795
6	6·461	6·334	6·450	11	1·7159	1·5795

NOTE.   For further particulars of threads, see B.S. 21, ' Pipe Threads, Part I : Basic sizes and tolerances.'

Elbows, Tees and Crosses, Equal

EQUAL ELBOW

EQUAL TEE

EQUAL CROSS

Elbows, Tees and Crosses, Equal
(B.S. 1740)
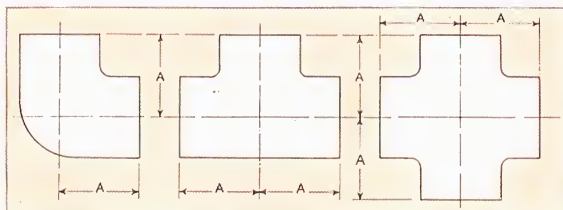
All dimensions are in inches

Nominal size of outlet	Minimum length centre to face A	Plus tolerance on dimension A
$\frac{1}{8}$ $\frac{1}{4}$ $\frac{3}{8}$	$\frac{5}{8}$ $\frac{7}{8}$ $\frac{15}{16}$	$\frac{1}{16}$ $\frac{1}{16}$ $\frac{1}{16}$
$\frac{1}{2}$ $\frac{3}{4}$ 1	$1\frac{1}{4}$ $1\frac{3}{8}$ $1\frac{11}{16}$	$\frac{1}{8}$ $\frac{1}{8}$ $\frac{3}{16}$
$1\frac{1}{4}$ $1\frac{1}{2}$ 2	2 $2\frac{1}{16}$ $2\frac{1}{2}$	$\frac{3}{16}$ $\frac{3}{16}$ $\frac{3}{16}$
$2\frac{1}{2}$ 3 $3\frac{1}{2}$	3 $3\frac{1}{2}$ 4	$\frac{1}{4}$ $\frac{5}{16}$ $\frac{5}{16}$
4 5 6	$4\frac{3}{8}$ $5\frac{3}{2}$ $6\frac{1}{4}$	$\frac{5}{16}$ $\frac{5}{16}$ $\frac{3}{8}$

For outside diameters see page 38.
For List Prices and Notes, see pages 8 to 10.

Elbows, Reducing
(B.S. 1740)

All dimensions are in inches

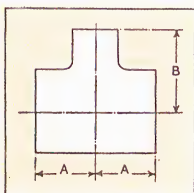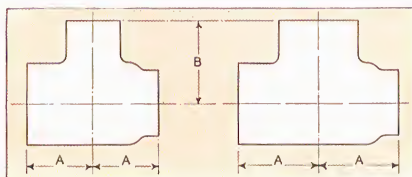| Nominal sizes of outlets	Minimum length centre to face A	Plus tolerance on dimension A	Minimum length centre to face B	Plus tolerance on dimension B
$\frac{1}{4} \times \frac{1}{8}$	$\frac{13}{16}$	$\frac{1}{16}$	$\frac{7}{8}$	$\frac{1}{16}$
$\frac{3}{8} \times \frac{1}{8}$	$\frac{13}{16}$	$\frac{1}{16}$	$\frac{15}{16}$	$\frac{1}{16}$
$\frac{3}{8} \times \frac{1}{4}$	$\frac{7}{8}$	$\frac{1}{16}$	$\frac{15}{16}$	$\frac{1}{16}$
$\frac{1}{2} \times \frac{1}{4}$	1	$\frac{1}{16}$	$1\frac{1}{4}$	$\frac{1}{8}$
$\frac{1}{2} \times \frac{3}{8}$	$1\frac{1}{16}$	$\frac{1}{8}$	$1\frac{1}{4}$	$\frac{1}{8}$
$\frac{3}{4} \times \frac{1}{4}$	$1\frac{1}{16}$	$\frac{1}{8}$	$1\frac{3}{8}$	$\frac{1}{8}$
$\frac{3}{4} \times \frac{3}{8}$	$1\frac{1}{8}$	$\frac{1}{8}$	$1\frac{3}{8}$	$\frac{1}{8}$
$\frac{3}{4} \times \frac{1}{2}$	$1\frac{1}{4}$	$\frac{1}{8}$	$1\frac{3}{8}$	$\frac{1}{8}$
$1 \times \frac{3}{8}$	$1\frac{1}{4}$	$\frac{1}{8}$	$1\frac{11}{16}$	$\frac{3}{16}$
$1 \times \frac{1}{2}$	$1\frac{3}{8}$	$\frac{1}{8}$	$1\frac{11}{16}$	$\frac{3}{16}$
$1 \times \frac{3}{4}$	$1\frac{1}{2}$	$\frac{1}{8}$	$1\frac{11}{16}$	$\frac{3}{16}$
$1\frac{1}{4} \times \frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{8}$	2	$\frac{3}{16}$
$1\frac{1}{4} \times \frac{3}{4}$	$1\frac{5}{8}$	$\frac{3}{16}$	2	$\frac{3}{16}$
$1\frac{1}{4} \times 1$	$1\frac{3}{4}$	$\frac{3}{16}$	2	$\frac{3}{16}$

Other reducing sizes can also be supplied.
For outside diameters see page 38.
These are charged at the List Price of their larger diameter.
For List Prices and Notes, see pages 8 to 10.

All dimensions are in inches

Nominal sizes of outlets	Minimum length centre to face A	Plus tolerance on dimension A	Minimum length centre to face B	Plus tolerance on dimension B
$1\frac{1}{2} \times \frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{8}$	$2\frac{1}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times \frac{3}{4}$	$1\frac{5}{8}$	$\frac{3}{16}$	$2\frac{1}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times 1$	$1\frac{3}{4}$	$\frac{3}{16}$	$2\frac{1}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times 1\frac{1}{4}$	$1\frac{15}{16}$	$\frac{3}{16}$	$2\frac{1}{16}$	$\frac{3}{16}$
$2 \times \frac{1}{2}$	$1\frac{5}{8}$	$\frac{3}{16}$	$2\frac{1}{2}$	$\frac{3}{16}$
$2 \times \frac{3}{4}$	$1\frac{3}{4}$	$\frac{3}{16}$	$2\frac{1}{2}$	$\frac{3}{16}$
2×1	$1\frac{7}{8}$	$\frac{3}{16}$	$2\frac{1}{2}$	$\frac{3}{16}$
$2 \times 1\frac{1}{4}$	$2\frac{1}{16}$	$\frac{3}{16}$	$2\frac{1}{2}$	$\frac{3}{16}$
$2 \times 1\frac{1}{2}$	$2\frac{3}{16}$	$\frac{3}{16}$	$2\frac{1}{2}$	$\frac{3}{16}$
$2\frac{1}{2} \times 1\frac{1}{2}$	$2\frac{3}{8}$	$\frac{3}{16}$	3	$\frac{1}{4}$
$2\frac{1}{2} \times 2$	$2\frac{5}{8}$	$\frac{1}{4}$	3	$\frac{1}{4}$
3×1	$2\frac{3}{8}$	$\frac{3}{16}$	$3\frac{1}{2}$	$\frac{5}{16}$
3×2	$2\frac{7}{8}$	$\frac{1}{4}$	$3\frac{1}{2}$	$\frac{5}{16}$
4×2	$3\frac{1}{4}$	$\frac{5}{16}$	$4\frac{1}{2}$	$\frac{5}{16}$
4×3	$3\frac{3}{4}$	$\frac{5}{16}$	$4\frac{1}{2}$	$\frac{5}{16}$

Other reducing sizes can also be supplied.
These are charged at the List Price of their larger diameter.

Tees, Reducing (on branch)
(B.S. 1740)

All dimensions are in inches

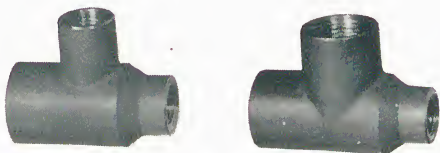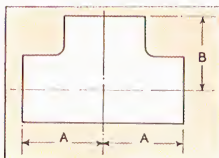| Nominal sizes of outlets	Minimum length centre to face A	Plus tolerance on dimension A	Minimum length centre to face B	Plus tolerance on dimension B
$\frac{1}{4} \times \frac{1}{8}$	$\frac{13}{16}$	$\frac{1}{16}$	$\frac{7}{8}$	$\frac{1}{16}$
$\frac{3}{8} \times \frac{1}{8}$	$\frac{13}{16}$	$\frac{1}{16}$	$\frac{15}{16}$	$\frac{1}{16}$
$\frac{3}{8} \times \frac{1}{4}$	$\frac{7}{8}$	$\frac{1}{16}$	$\frac{15}{16}$	$\frac{1}{16}$
$\frac{1}{2} \times \frac{1}{4}$	1	$\frac{1}{16}$	$1\frac{1}{4}$	$\frac{1}{8}$
$\frac{1}{2} \times \frac{3}{8}$	$1\frac{1}{16}$	$\frac{1}{8}$	$1\frac{1}{4}$	$\frac{1}{8}$
$\frac{3}{4} \times \frac{1}{4}$	$1\frac{1}{16}$	$\frac{1}{8}$	$1\frac{3}{8}$	$\frac{1}{8}$
$\frac{3}{4} \times \frac{3}{8}$	$1\frac{1}{8}$	$\frac{1}{8}$	$1\frac{3}{8}$	$\frac{1}{8}$
$\frac{3}{4} \times \frac{1}{2}$	$1\frac{1}{4}$	$\frac{1}{8}$	$1\frac{3}{8}$	$\frac{1}{8}$
$1 \times \frac{1}{4}$	$1\frac{3}{16}$	$\frac{1}{8}$	$1\frac{11}{16}$	$\frac{3}{16}$
$1 \times \frac{3}{8}$	$1\frac{1}{4}$	$\frac{1}{8}$	$1\frac{11}{16}$	$\frac{3}{16}$
$1 \times \frac{1}{2}$	$1\frac{3}{8}$	$\frac{1}{8}$	$1\frac{11}{16}$	$\frac{3}{16}$
$1 \times \frac{3}{4}$	$1\frac{1}{2}$	$\frac{1}{8}$	$1\frac{11}{16}$	$\frac{3}{16}$
$1\frac{1}{4} \times \frac{3}{8}$	$1\frac{3}{8}$	$\frac{1}{8}$	2	$\frac{3}{16}$
$1\frac{1}{4} \times \frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{8}$	2	$\frac{3}{16}$
$1\frac{1}{4} \times \frac{3}{4}$	$1\frac{5}{8}$	$\frac{3}{16}$	2	$\frac{3}{16}$
$1\frac{1}{4} \times 1$	$1\frac{3}{4}$	$\frac{3}{16}$	2	
$1\frac{1}{2} \times \frac{3}{8}$	$1\frac{7}{16}$	$\frac{1}{8}$	$2\frac{1}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times \frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{8}$	$2\frac{1}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times \frac{3}{4}$	$1\frac{5}{8}$	$\frac{3}{16}$	$2\frac{1}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times 1$	$1\frac{3}{4}$	$\frac{3}{16}$	$2\frac{1}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times 1\frac{1}{4}$	$1\frac{15}{16}$	$\frac{3}{16}$	$2\frac{1}{16}$	$\frac{3}{16}$

Other reducing sizes can also be supplied.
For outside diameters, see page 38.
These are charged at the List Price of their larger diameter.
For List Prices and Notes, see pages 8 to 10.

Tees, Reducing (on branch) (contd.) (B.S. 1740)

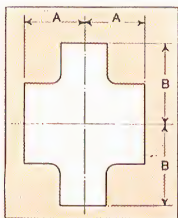

All dimensions are in inches

Nominal sizes of outlets	Minimum length centre to face A	Plus tolerance on dimension A	Minimum length centre to face B	Plus tolerance on dimension B
2 × ½	1⅝	3/16	2½	3/16
2 × ¾	1¾	3/16	2½	3/16
2 × 1	1⅞	3/16	2½	3/16
2 × 1¼	2 1/16	3/16	2½	3/16
2 × 1½	2 3/16	3/16	2½	3/16
2½ × 1	2⅛	3/16	3	¼
2½ × 1¼	2¼	3/16	3	¼
2½ × 1½	2⅜	3/16	3	¼
2½ × 2	2⅝	¼	3	¼
3 × 1	2⅜	3/16	3½	5/16
3 × 1¼	2½	3/16	3½	5/16
3 × 1½	2⅝	¼	3½	5/16
3 × 2	2⅞	¼	3½	5/16
3 × 2½	3⅛	5/16	3½	5/16
4 × 1	2¾	¼	4½	5/16
4 × 1½	3	¼	4½	5/16
4 × 2	3¼	5/16	4½	5/16
4 × 3	3¾	5/16	4½	5/16
5 × 3	4½	5/16	5½	5/16
5 × 4	5	5/16	5½	5/16
6 × 3	4¾	5/16	6¼	3/8
6 × 4	5¼	5/16	6¼	3/8

Other reducing sizes can also be supplied.
For outside diameters, see page 38.
These are charged at the List Price of their larger diameter.
For List Prices and Notes, see pages 8 to 10.

Tees, Reducing (on the run and branch or on the run only) (B.S. 1740)

All dimensions are in inches

Nominal sizes of outlets	Minimum length centre to face A	Plus tolerance on dimension A	Minimum length centre to face B	Plus tolerance on dimension B
$\frac{3}{4} \times \frac{1}{4} \times \frac{1}{2}$	$1\frac{1}{4}$	$\frac{1}{8}$	$1\frac{3}{8}$	$\frac{1}{8}$
$\frac{3}{4} \times \frac{1}{2} \times \frac{3}{4}$	$1\frac{3}{8}$	$\frac{1}{8}$	$1\frac{3}{8}$	$\frac{1}{8}$
$1 \times \frac{3}{4} \times \frac{1}{2}$	$1\frac{3}{8}$	$\frac{1}{8}$	$1\frac{11}{16}$	$\frac{3}{16}$
$1 \times \frac{3}{4} \times \frac{3}{4}$	$1\frac{1}{2}$	$\frac{1}{8}$	$1\frac{11}{16}$	$\frac{3}{16}$
$1 \times \frac{3}{4} \times 1$	$1\frac{11}{16}$	$\frac{3}{16}$	$1\frac{11}{16}$	$\frac{3}{16}$
$1\frac{1}{4} \times 1 \times \frac{3}{4}$	$1\frac{5}{8}$	$\frac{3}{16}$	2	$\frac{3}{16}$
$1\frac{1}{4} \times 1 \times 1$	$1\frac{3}{4}$	$\frac{3}{16}$	2	$\frac{3}{16}$
$1\frac{1}{4} \times 1 \times 1\frac{1}{4}$	2	$\frac{3}{16}$	2	$\frac{3}{16}$
$1\frac{1}{2} \times 1 \times 1$	$1\frac{3}{4}$	$\frac{3}{16}$	$2\frac{1}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times 1 \times 1\frac{1}{2}$	$2\frac{1}{16}$	$\frac{3}{16}$	$2\frac{1}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times 1\frac{1}{4} \times 1$	$1\frac{3}{4}$	$\frac{3}{16}$	$2\frac{1}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times 1\frac{1}{4} \times 1\frac{1}{4}$	$1\frac{15}{16}$	$\frac{3}{16}$	$2\frac{1}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times 1\frac{1}{4} \times 1\frac{1}{2}$	$2\frac{1}{16}$	$\frac{3}{16}$	$2\frac{1}{16}$	$\frac{3}{16}$

Other reducing sizes can also be supplied.
For outside diameters, see page 38.
These are charged at the List Price of their largest diameter.
For List Prices and Notes, see pages 8 to 10.

Tees, Reducing (on the run and branch or on the run only) (contd.) (B.S. 1740)

All dimensions are in inches

Nominal sizes of outlets	Minimum length centre to face A	Plus tolerance on dimension A	Minimum length centre to face B	Plus tolerance on dimension B
2 ×1 ×2	$2\frac{1}{2}$	$\frac{3}{16}$	$2\frac{1}{2}$	$\frac{3}{16}$
2 ×1¼×2	$2\frac{1}{2}$	$\frac{3}{16}$	$2\frac{1}{2}$	$\frac{3}{16}$
2 ×1½×1	$1\frac{7}{8}$	$\frac{3}{16}$	$2\frac{1}{2}$	$\frac{3}{16}$
2 ×1½×1½	$2\frac{3}{16}$	$\frac{3}{16}$	$2\frac{1}{2}$	$\frac{3}{16}$
2 ×1½×2	$2\frac{1}{2}$	$\frac{3}{16}$	$2\frac{1}{2}$	$\frac{3}{16}$
2½×2 ×2	$2\frac{5}{8}$	$\frac{1}{4}$	3	$\frac{1}{4}$
2½×2 ×2½	3	$\frac{1}{4}$	3	$\frac{1}{4}$
3 ×2 ×2	$2\frac{7}{8}$	$\frac{1}{4}$	$3\frac{1}{2}$	$\frac{5}{16}$
3 ×2 ×3	$3\frac{1}{2}$	$\frac{5}{16}$	$3\frac{1}{2}$	$\frac{5}{16}$
4 ×3 ×3	$3\frac{3}{4}$	$\frac{5}{16}$	$4\frac{1}{2}$	$\frac{5}{16}$

Other reducing sizes can also be supplied.
For outside diameters, see page 38.
These are charged at the List Price of their largest diameter.
For List Prices and Notes, see pages 8 to 10.

Tees (increasing on the branch) (B.S. 1740)

All dimensions are in inches

Nominal sizes of outlets	Minimum length centre to face A	Plus tolerance on dimension A	Minimum length centre to face B	Plus tolerance on dimension B
$\frac{1}{8} \times \frac{1}{4}$	$\frac{7}{8}$	$\frac{1}{16}$	$\frac{13}{16}$	$\frac{1}{16}$
$\frac{1}{4} \times \frac{3}{8}$	$\frac{15}{16}$	$\frac{1}{16}$	$\frac{7}{8}$	$\frac{1}{16}$
$\frac{3}{8} \times \frac{1}{2}$	$1\frac{1}{4}$	$\frac{1}{8}$	$1\frac{1}{16}$	$\frac{1}{8}$
$\frac{1}{2} \times \frac{3}{4}$	$1\frac{3}{8}$	$\frac{1}{8}$	$1\frac{1}{4}$	$\frac{1}{8}$
$\frac{1}{2} \times 1$	$1\frac{11}{16}$	$\frac{3}{16}$	$1\frac{3}{8}$	$\frac{1}{8}$
$\frac{3}{4} \times 1$	$1\frac{11}{16}$	$\frac{3}{16}$	$1\frac{1}{2}$	$\frac{1}{8}$
$1 \times 1\frac{1}{4}$	2	$\frac{3}{16}$	$1\frac{3}{4}$	$\frac{3}{16}$
$1 \times 1\frac{1}{2}$	$2\frac{1}{16}$	$\frac{3}{16}$	$1\frac{3}{4}$	$\frac{3}{16}$
$1\frac{1}{4} \times 1\frac{1}{2}$	$2\frac{1}{16}$	$\frac{3}{16}$	$1\frac{15}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times 2$	$2\frac{1}{2}$	$\frac{3}{16}$	$2\frac{3}{16}$	$\frac{3}{16}$
$2 \times 2\frac{1}{2}$	3	$\frac{1}{4}$	$2\frac{5}{8}$	$\frac{1}{4}$
2×3	$3\frac{1}{2}$	$\frac{5}{16}$	$2\frac{7}{8}$	$\frac{1}{4}$
$2\frac{1}{2} \times 3$	$3\frac{1}{2}$	$\frac{5}{16}$	$3\frac{1}{8}$	$\frac{5}{16}$
3×4	$4\frac{1}{2}$	$\frac{5}{16}$	$3\frac{3}{4}$	$\frac{5}{16}$

For outside diameters, see page 38.
These are charged at the List Price of their larger diameter.
For List Prices and Notes, see pages 8 to 10.
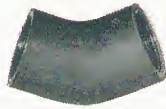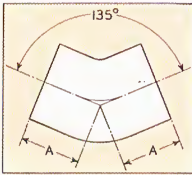
Crosses, Reducing (B.S. 1740)

All dimensions are in inches

Nominal sizes of outlets	Minimum length centre to face A	Plus tolerance on dimension A	Minimum length centre to face B	Plus tolerance on dimension B
$\frac{1}{4} \times \frac{1}{8}$	$\frac{13}{16}$	$\frac{1}{16}$	$\frac{7}{8}$	$\frac{1}{16}$
$\frac{3}{8} \times \frac{1}{4}$	$\frac{7}{8}$	$\frac{1}{16}$	$\frac{15}{16}$	$\frac{1}{16}$
$\frac{1}{2} \times \frac{3}{8}$	$1\frac{1}{16}$	$\frac{1}{8}$	$1\frac{1}{4}$	$\frac{1}{8}$
$\frac{3}{4} \times \frac{1}{2}$	$1\frac{1}{4}$	$\frac{1}{8}$	$1\frac{3}{8}$	$\frac{1}{8}$
$1 \times \frac{1}{2}$	$1\frac{3}{8}$	$\frac{1}{8}$	$1\frac{11}{16}$	$\frac{3}{16}$
$1 \times \frac{3}{4}$	$1\frac{1}{2}$	$\frac{1}{8}$	$1\frac{11}{16}$	$\frac{3}{16}$
$1\frac{1}{4} \times \frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{8}$	2	$\frac{3}{16}$
$1\frac{1}{4} \times 1$	$1\frac{3}{4}$	$\frac{3}{16}$	2	$\frac{3}{16}$
$1\frac{1}{2} \times \frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{8}$	$2\frac{1}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times 1$	$1\frac{3}{4}$	$\frac{3}{16}$	$2\frac{1}{16}$	$\frac{3}{16}$
2×1	$1\frac{7}{8}$	$\frac{3}{16}$	$2\frac{1}{2}$	$\frac{3}{16}$
$2 \times 1\frac{1}{2}$	$2\frac{3}{16}$	$\frac{3}{16}$	$2\frac{1}{2}$	$\frac{3}{16}$
$2\frac{1}{2} \times 2$	$2\frac{5}{8}$	$\frac{1}{4}$	3	$\frac{1}{4}$
$3 \times 1\frac{1}{2}$	$2\frac{5}{8}$	$\frac{1}{4}$	$3\frac{1}{2}$	$\frac{5}{16}$
3×2	$2\frac{7}{8}$	$\frac{1}{4}$	$3\frac{1}{2}$	$\frac{5}{16}$
4×2	$3\frac{1}{4}$	$\frac{5}{16}$	$4\frac{1}{2}$	$\frac{5}{16}$
4×3	$3\frac{3}{4}$	$\frac{5}{16}$	$4\frac{1}{2}$	$\frac{5}{16}$
5×3	$4\frac{1}{2}$	$\frac{5}{16}$	$5\frac{1}{2}$	$\frac{5}{16}$
5×4	5	$\frac{5}{16}$	$5\frac{1}{2}$	$\frac{5}{16}$
6×3	$4\frac{3}{4}$	$\frac{5}{16}$	$6\frac{1}{4}$	$\frac{3}{8}$
6×4	$5\frac{1}{4}$	$\frac{5}{16}$	$6\frac{1}{4}$	$\frac{3}{8}$

Other reducing sizes can also be supplied.
For outside diameters, see page 38.
These are charged at the List Price of their larger diameter.
For List Prices and Notes, see pages 8 to 10.

Elbows, Tees and Crosses, Side Outlet, Equal

SIDE OUTLET ELBOW

SIDE OUTLET TEE

SIDE OUTLET CROSS

Elbows, Tees and Crosses, Side Outlet, Equal (B.S. 1740)
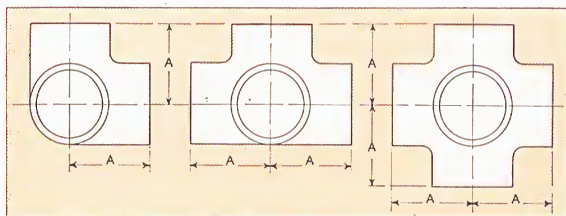
All dimensions are in inches

Nominal size of outlets	Minimum length centre to face A	Plus tolerance on dimension A
$\frac{1}{2}$	$1\frac{1}{4}$	$\frac{1}{8}$
$\frac{3}{4}$	$1\frac{3}{8}$	$\frac{1}{8}$
1	$1\frac{11}{16}$	$\frac{3}{16}$
$1\frac{1}{4}$	2	$\frac{3}{16}$
$1\frac{1}{2}$	$2\frac{1}{16}$	$\frac{3}{16}$
2	$2\frac{1}{2}$	$\frac{3}{16}$

For unequal fittings the purchaser should send a sketch with his enquiry and order to indicate whether the side outlet is left or right hand in relation to the other outlets, see page 37.

For outside diameters, see page 38.

Prices on application.

Elbows, Round, Male and Female, Equal (B.S. 1740)
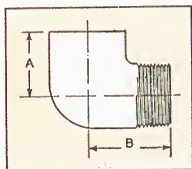
All dimensions are in inches

Nom. size of outlets	Min. length centre to face A	Plus tolerance on dimension A	Min. length centre to face B	Plus tolerance on dimension B	Min. bore of male end	Max. bore of male end
$\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{16}$	$1\frac{1}{16}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{5}{16}$
$\frac{3}{8}$	$\frac{13}{16}$	$\frac{1}{16}$	$1\frac{1}{8}$	$\frac{1}{8}$	$\frac{11}{32}$	$\frac{13}{32}$
$\frac{1}{2}$	1	$\frac{1}{16}$	$1\frac{3}{8}$	$\frac{1}{8}$	$\frac{29}{64}$	$\frac{33}{64}$
$\frac{3}{4}$	$1\frac{3}{16}$	$\frac{1}{8}$	$1\frac{9}{16}$	$\frac{3}{16}$	$\frac{23}{32}$	$\frac{13}{16}$
1	$1\frac{7}{16}$	$\frac{1}{8}$	$1\frac{13}{16}$	$\frac{3}{16}$	$\frac{15}{16}$	$1\frac{1}{32}$
$1\frac{1}{4}$	$1\frac{11}{16}$	$\frac{3}{16}$	$2\frac{1}{8}$	$\frac{3}{16}$	$1\frac{11}{64}$	$1\frac{17}{64}$
$1\frac{1}{2}$	$1\frac{15}{16}$	$\frac{3}{16}$	$2\frac{1}{4}$	$\frac{3}{16}$	$1\frac{7}{16}$	$1\frac{35}{64}$
2	$2\frac{5}{16}$	$\frac{3}{16}$	$2\frac{3}{4}$	$\frac{1}{4}$	$1\frac{7}{8}$	$2\frac{1}{64}$
$2\frac{1}{2}$	$2\frac{11}{16}$	$\frac{1}{4}$	$3\frac{1}{4}$	$\frac{5}{16}$	$2\frac{7}{16}$	$2\frac{19}{32}$
3	$3\frac{3}{16}$	$\frac{5}{16}$	$3\frac{11}{16}$	$\frac{5}{16}$	$2\frac{15}{16}$	$3\frac{7}{64}$
$3\frac{1}{2}$	$3\frac{1}{2}$	$\frac{5}{16}$	4	$\frac{5}{16}$	$3\frac{11}{32}$	$3\frac{19}{32}$
4	$3\frac{15}{16}$	$\frac{5}{16}$	$4\frac{1}{2}$	$\frac{5}{16}$	$3\frac{13}{16}$	$4\frac{7}{64}$

For outside diameters, see page 38.
Prices on application.

Elbows, Equal, 135°
(B.S. 1740)

All dimensions are in inches

Nominal size of outlets	Minimum length centre to face A	Plus tolerance on dimension A
$\frac{1}{8}$	$\frac{5}{8}$	$\frac{1}{16}$
$\frac{1}{4}$	$\frac{11}{16}$	$\frac{1}{16}$
$\frac{3}{8}$	$\frac{3}{4}$	$\frac{1}{16}$
$\frac{1}{2}$	$\frac{7}{8}$	$\frac{1}{16}$
$\frac{3}{4}$	$1\frac{1}{16}$	$\frac{1}{8}$
1	$1\frac{5}{16}$	$\frac{1}{8}$
$1\frac{1}{4}$	$1\frac{1}{2}$	$\frac{1}{8}$
$1\frac{1}{2}$	$1\frac{3}{4}$	$\frac{3}{16}$
2	2	$\frac{3}{16}$
$2\frac{1}{2}$	$2\frac{3}{8}$	$\frac{3}{16}$
3	$2\frac{7}{8}$	$\frac{1}{4}$
$3\frac{1}{2}$	$3\frac{3}{8}$	$\frac{5}{16}$
4	$4\frac{1}{8}$	$\frac{5}{16}$

For outside diameters, see page 38.
Prices on application.

Y Pieces, Equal
(B.S. 1740)
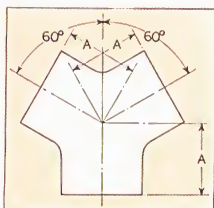
All dimensions are in inches

Nominal size of outlets	Minimum length centre to face A	Plus tolerance on dimension A
$\frac{1}{2}$	$1\frac{1}{16}$	$\frac{1}{8}$
$\frac{3}{4}$	$1\frac{3}{8}$	$\frac{1}{8}$
1	$1\frac{1}{2}$	$\frac{1}{8}$
$1\frac{1}{4}$	$1\frac{3}{4}$	$\frac{3}{16}$
$1\frac{1}{2}$	$1\frac{15}{16}$	$\frac{3}{16}$
2	$2\frac{1}{4}$	$\frac{3}{16}$
$2\frac{1}{2}$	$2\frac{13}{16}$	$\frac{1}{4}$
3	$3\frac{1}{8}$	$\frac{5}{16}$
$3\frac{1}{2}$	$3\frac{7}{16}$	$\frac{5}{16}$
4	$3\frac{15}{16}$	$\frac{5}{16}$

For outside diameters, see page 38.
Prices on application.

Sockets, Equal
(B.S. 1740)
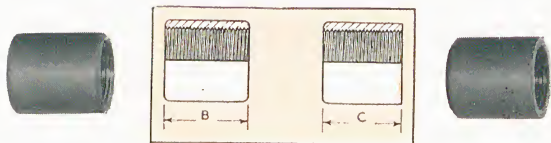
All dimensions are in inches

Nominal size	Minimum length of ordinary socket B	Plus tolerance on dimension B	Length of faced socket	
			Minimum	Maximum
				C
$\frac{1}{8}$	$\frac{3}{4}$	$\frac{1}{16}$	$\frac{5}{8}$	$\frac{11}{16}$
$\frac{1}{4}$	1	$\frac{1}{16}$	$\frac{7}{8}$	$\frac{15}{16}$
$\frac{3}{8}$	$1\frac{1}{8}$	$\frac{1}{8}$	1	$1\frac{1}{8}$
$\frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{1}{2}$
$\frac{3}{4}$	$1\frac{5}{8}$	$\frac{3}{16}$	$1\frac{1}{2}$	$1\frac{5}{8}$
1	$1\frac{7}{8}$	$\frac{3}{16}$	$1\frac{3}{4}$	$1\frac{7}{8}$
$1\frac{1}{4}$	$2\frac{1}{8}$	$\frac{3}{16}$	2	$2\frac{3}{16}$
$1\frac{1}{2}$	$2\frac{1}{4}$	$\frac{3}{16}$	$2\frac{1}{8}$	$2\frac{5}{16}$
2	$2\frac{1}{2}$	$\frac{3}{16}$	$2\frac{3}{8}$	$2\frac{9}{16}$
$2\frac{1}{2}$	$2\frac{3}{4}$	$\frac{1}{4}$	$2\frac{5}{8}$	$2\frac{7}{8}$
3	3	$\frac{1}{4}$	$2\frac{7}{8}$	$3\frac{1}{8}$
$3\frac{1}{2}$	$3\frac{1}{4}$	$\frac{5}{16}$	$3\frac{1}{8}$	$3\frac{3}{8}$
4	$3\frac{1}{2}$	$\frac{5}{16}$	$3\frac{3}{8}$	$3\frac{5}{8}$
5	$3\frac{3}{4}$	$\frac{5}{16}$	$3\frac{5}{8}$	$3\frac{7}{8}$
6	$3\frac{3}{4}$	$\frac{5}{16}$	$3\frac{5}{8}$	$3\frac{7}{8}$

NOTE.—Sockets are as specified in B.S. 1387.
For outside diameters, see page 38.
For List Prices and Notes, see pages 8 to 10.
Extra long sockets are charged at special prices.

Sockets, Reducing
(B.S. 1740)

All dimensions are in inches

Nominal sizes of outlets	Minimum length A	Plus tolerance on dimension A
$\frac{1}{4} \times \frac{1}{8}$	1	$\frac{1}{16}$
$\frac{3}{8} \times \frac{1}{8}$	$1\frac{3}{16}$	$\frac{1}{8}$
$\frac{3}{8} \times \frac{1}{4}$	$1\frac{1}{8}$	$\frac{1}{8}$
$\frac{1}{2} \times \frac{1}{8}$	$1\frac{5}{8}$	$\frac{3}{16}$
$\frac{1}{2} \times \frac{1}{4}$	$1\frac{9}{16}$	$\frac{3}{16}$
$\frac{1}{2} \times \frac{3}{8}$	$1\frac{1}{2}$	$\frac{1}{8}$
$\frac{3}{4} \times \frac{1}{4}$	$1\frac{3}{4}$	$\frac{3}{16}$
$\frac{3}{4} \times \frac{3}{8}$	$1\frac{11}{16}$	$\frac{3}{16}$
$\frac{3}{4} \times \frac{1}{2}$	$1\frac{5}{8}$	$\frac{3}{16}$
$1 \times \frac{1}{4}$	$2\frac{1}{8}$	$\frac{3}{16}$
$1 \times \frac{3}{8}$	$2\frac{1}{16}$	$\frac{3}{16}$
$1 \times \frac{1}{2}$	2	$\frac{3}{16}$
$1 \times \frac{3}{4}$	$1\frac{15}{16}$	$\frac{3}{16}$
$1\frac{1}{4} \times \frac{3}{8}$	$2\frac{3}{8}$	$\frac{3}{16}$
$1\frac{1}{4} \times \frac{1}{2}$	$2\frac{5}{16}$	$\frac{3}{16}$
$1\frac{1}{4} \times \frac{3}{4}$	$2\frac{1}{4}$	$\frac{3}{16}$
$1\frac{1}{4} \times 1$	$2\frac{3}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times \frac{1}{2}$	$2\frac{9}{16}$	$\frac{1}{4}$
$1\frac{1}{2} \times \frac{3}{4}$	$2\frac{1}{2}$	$\frac{3}{16}$
$1\frac{1}{2} \times 1$	$2\frac{7}{16}$	$\frac{3}{16}$
$1\frac{1}{2} \times 1\frac{1}{4}$	$2\frac{3}{8}$	$\frac{3}{16}$

Other reducing sizes can also be supplied.
For outside diameters, see page 38.
These are charged at the List Price of their larger diameter.
For List Prices and Notes, see pages 8 to 10.

Sockets, Reducing
(B.S. 1740)

All dimensions are in inches

Nominal sizes of outlets	Minimum length A	Plus tolerance on dimension A
$2 \times \frac{1}{2}$	$2\frac{3}{4}$	$\frac{1}{4}$
$2 \times \frac{3}{4}$	$2\frac{11}{16}$	$\frac{1}{4}$
2×1	$2\frac{5}{8}$	$\frac{1}{4}$
$2 \times 1\frac{1}{4}$	$2\frac{9}{16}$	$\frac{1}{4}$
$2 \times 1\frac{1}{2}$	$2\frac{1}{2}$	$\frac{3}{16}$
$2\frac{1}{2} \times 1$	3	$\frac{1}{4}$
$2\frac{1}{2} \times 1\frac{1}{4}$	$2\frac{15}{16}$	$\frac{1}{4}$
$2\frac{1}{2} \times 1\frac{1}{2}$	$2\frac{7}{8}$	$\frac{1}{4}$
$2\frac{1}{2} \times 2$	$2\frac{13}{16}$	$\frac{1}{4}$
3×1	$3\frac{3}{8}$	$\frac{5}{16}$
$3 \times 1\frac{1}{4}$	$3\frac{5}{16}$	$\frac{5}{16}$
$3 \times 1\frac{1}{2}$	$3\frac{1}{4}$	$\frac{5}{16}$
3×2	$3\frac{3}{16}$	$\frac{5}{16}$
$3 \times 2\frac{1}{2}$	$3\frac{1}{8}$	$\frac{5}{16}$
$3\frac{1}{2} \times 3$	$3\frac{3}{8}$	$\frac{5}{16}$
$4 \times 1\frac{1}{2}$	$4\frac{1}{16}$	$\frac{5}{16}$
4×2	4	$\frac{5}{16}$
$4 \times 2\frac{1}{2}$	$3\frac{15}{16}$	$\frac{5}{16}$
4×3	$3\frac{7}{8}$	$\frac{5}{16}$
$4 \times 3\frac{1}{2}$	$3\frac{7}{8}$	$\frac{5}{16}$
5×3	$4\frac{1}{2}$	$\frac{5}{16}$
5×4	$4\frac{1}{2}$	$\frac{5}{16}$
6×3	$5\frac{1}{2}$	$\frac{5}{16}$
6×4	$5\frac{1}{2}$	$\frac{5}{16}$

Other reducing sizes can also be supplied.
For outside diameters, see page 38.
These are charged at the List Price of their larger diameter.
For List Prices and Notes, see pages 8 to 10.

Caps (B.S. 1740)
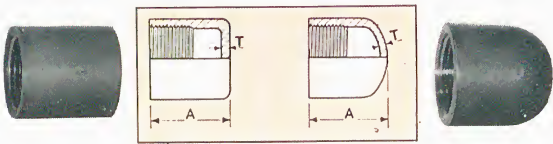
All dimensions are in inches

Nominal size	Minimum length A	Plus tolerance on dimension A	Minimum thickness T
$\frac{1}{8}$	$\frac{3}{4}$	$\frac{1}{16}$	·128
$\frac{1}{4}$	$\frac{15}{16}$	$\frac{1}{16}$	·144
$\frac{3}{8}$	$1\frac{1}{16}$	$\frac{1}{8}$	·160
$\frac{1}{2}$	$1\frac{7}{16}$	$\frac{1}{8}$	·176
$\frac{3}{4}$	$1\frac{1}{2}$	$\frac{1}{8}$	·192
1	$1\frac{3}{4}$	$\frac{3}{16}$	·192
$1\frac{1}{4}$	2	$\frac{3}{16}$	·212
$1\frac{1}{2}$	$2\frac{1}{8}$	$\frac{3}{16}$	·232
2	$2\frac{3}{8}$	$\frac{3}{16}$	·232
$2\frac{1}{2}$	$2\frac{5}{8}$	$\frac{1}{4}$	·252
3	$2\frac{7}{8}$	$\frac{1}{4}$	·276
$3\frac{1}{2}$	$3\frac{1}{8}$	$\frac{5}{16}$	·300
4	$3\frac{3}{8}$	$\frac{5}{16}$	·312
5	$3\frac{7}{8}$	$\frac{5}{16}$	·375
6	$3\frac{7}{8}$	$\frac{5}{16}$	·375

Caps with flat or domed ends are supplied at our option.
For List Prices and Notes, see pages 8 to 10.
For outside diameters, see page 38.

Plugs (B.S. 1740)
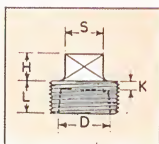
All dimensions are in inches

Nominal size	Minimum length of thread for basic gauge length L	Approx. size of square S	Approx. height of square H	Maximum internal diameter if hollow D	Minimum thickness of metal if hollow K
$\frac{1}{8}$	·2545	$\frac{1}{4}$	$\frac{1}{4}$	—	—
$\frac{1}{4}$	·3814	$\frac{11}{32}$	$\frac{1}{4}$	—	—
$\frac{3}{8}$	·3947	$\frac{7}{16}$	$\frac{3}{8}$	—	—
$\frac{1}{2}$	·5178	$\frac{1}{2}$	$\frac{3}{8}$	—	—
$\frac{3}{4}$	·5714	$\frac{9}{16}$	$\frac{1}{2}$	—	—
1	·6591	$\frac{11}{16}$	$\frac{1}{2}$	$\frac{7}{8}$	·15
$1\frac{1}{4}$	·7500	$\frac{7}{8}$	$\frac{5}{8}$	$1\frac{7}{32}$	·20
$1\frac{1}{2}$	·7500	$1\frac{1}{16}$	$\frac{5}{8}$	$1\frac{5}{16}$	·20
2	·9204	$1\frac{1}{4}$	$\frac{3}{4}$	$1\frac{7}{8}$	·20
$2\frac{1}{2}$	1·0511	$1\frac{7}{16}$	$\frac{3}{4}$	$2\frac{7}{16}$	·25
3	1·1761	$1\frac{7}{16}$	$\frac{7}{8}$	$2\frac{7}{8}$	·30
$3\frac{1}{2}$	1·2386	$1\frac{5}{8}$	$\frac{7}{8}$	$3\frac{3}{8}$	·30
4	1·4091	$1\frac{13}{16}$	1	$3\frac{13}{16}$	·40
5	1·5795	2	$1\frac{1}{8}$	$4\frac{3}{4}$	·45
6	1·5795	$2\frac{3}{8}$	$1\frac{1}{4}$	$5\frac{11}{16}$	·50

NOTE.—Plugs may be either solid or hollow, and the attention of the purchaser is drawn to the necessity of stating in his enquiry and order which pattern is required, for 1 inch size and larger.

For List Prices and Notes, see pages 8 to 10.

Hexagonal Backnuts
(B.S. 1740)
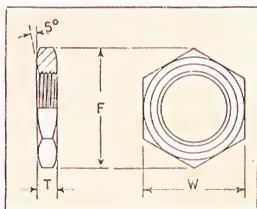
All dimensions are in inches

Nominal size	Width across flats W		Thickness T		Width across corners (approx.) F
	Nominal	Limits of tolerance	Minimum	Plus tolerance	
$\frac{1}{8}$	$\frac{3}{4}$	$\pm\frac{1}{32}$	$\frac{1}{4}$	$\frac{1}{16}$	$\frac{7}{8}$
$\frac{1}{4}$	$\frac{7}{8}$	$\pm\frac{1}{32}$	$\frac{1}{4}$	$\frac{1}{16}$	1
$\frac{3}{8}$	$1\frac{1}{16}$	$\pm\frac{1}{32}$	$\frac{9}{32}$	$\frac{1}{16}$	$1\frac{1}{4}$
$\frac{1}{2}$	$1\frac{1}{4}$	$\pm\frac{1}{32}$	$\frac{5}{16}$	$\frac{1}{16}$	$1\frac{7}{16}$
$\frac{3}{4}$	$1\frac{7}{16}$	$\pm\frac{1}{32}$	$\frac{11}{32}$	$\frac{1}{16}$	$1\frac{11}{16}$
1	$1\frac{13}{16}$	$\pm\frac{1}{32}$	$\frac{3}{8}$	$\frac{1}{16}$	$2\frac{1}{8}$
$1\frac{1}{4}$	$2\frac{3}{8}$	$\pm\frac{1}{32}$	$\frac{7}{16}$	$\frac{1}{16}$	$2\frac{3}{4}$
$1\frac{1}{2}$	$2\frac{1}{2}$	$\pm\frac{1}{32}$	$\frac{15}{32}$	$\frac{1}{16}$	$2\frac{7}{8}$
2	$3\frac{1}{16}$	$\pm\frac{1}{32}$	$\frac{17}{32}$	$\frac{1}{16}$	$3\frac{9}{16}$
$2\frac{1}{2}$	$3\frac{13}{16}$	$\pm\frac{1}{32}$	$\frac{11}{16}$	$\frac{1}{8}$	$4\frac{3}{8}$
3	$4\frac{1}{2}$	$\pm\frac{1}{32}$	$\frac{13}{16}$	$\frac{1}{8}$	$5\frac{3}{16}$
$3\frac{1}{2}$	$5\frac{1}{8}$	$\pm\frac{1}{32}$	$\frac{13}{16}$	$\frac{1}{8}$	$5\frac{15}{16}$
4	$5\frac{1}{2}$	$\pm\frac{1}{32}$	$\frac{7}{8}$	$\frac{1}{8}$	$6\frac{3}{8}$
5	$6\frac{3}{4}$	$\pm\frac{1}{32}$	$\frac{15}{16}$	$\frac{1}{8}$	$7\frac{13}{16}$
6	$7\frac{3}{4}$	$\pm\frac{1}{32}$	1	$\frac{1}{8}$	$8\frac{15}{16}$

Backnuts as specified in B.S. 1387.
All nuts are faced on one side.
For List Prices and Notes, see pages 8 to 10.

Running Nipples and Close Taper Nipples (B.S. 1740)
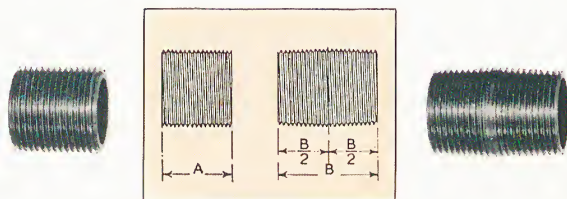
All dimensions are in inches

Nominal size	Minimum length A	Plus tolerance on dimension A	Minimum length B	Plus tolerance on dimension B
$\frac{1}{8}$	$\frac{1}{2}$	$\frac{1}{16}$	$\frac{3}{4}$	$\frac{1}{16}$
$\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{16}$	$1\frac{1}{8}$	$\frac{1}{8}$
$\frac{3}{8}$	$\frac{13}{16}$	$\frac{1}{16}$	$1\frac{1}{8}$	$\frac{1}{8}$
$\frac{1}{2}$	$1\frac{1}{16}$	$\frac{1}{8}$	$1\frac{1}{2}$	$\frac{1}{8}$
$\frac{3}{4}$	$1\frac{3}{16}$	$\frac{1}{8}$	$1\frac{5}{8}$	$\frac{3}{16}$
1	$1\frac{5}{16}$	$\frac{1}{8}$	$1\frac{15}{16}$	$\frac{3}{16}$
$1\frac{1}{4}$	$1\frac{1}{2}$	$\frac{1}{8}$	$2\frac{1}{8}$	$\frac{3}{16}$
$1\frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{8}$	$2\frac{1}{4}$	$\frac{3}{16}$
2	$1\frac{7}{8}$	$\frac{3}{16}$	$2\frac{7}{16}$	$\frac{3}{16}$
$2\frac{1}{2}$	2	$\frac{3}{16}$	$2\frac{3}{4}$	$\frac{1}{4}$
3	$2\frac{1}{4}$	$\frac{3}{16}$	$3\frac{1}{16}$	$\frac{5}{16}$
$3\frac{1}{2}$	$2\frac{3}{8}$	$\frac{3}{16}$	$3\frac{3}{16}$	$\frac{5}{16}$
4	$2\frac{3}{4}$	$\frac{1}{4}$	$3\frac{1}{2}$	$\frac{5}{16}$
5	$3\frac{1}{16}$	$\frac{5}{16}$	$3\frac{7}{8}$	$\frac{5}{16}$
6	$3\frac{1}{16}$	$\frac{5}{16}$	$3\frac{7}{8}$	$\frac{5}{16}$

For details of barrel nipples, see page 29.
Running nipples are made from Class ' C ' tube to B.S. 1387.
Close taper nipples are made from Class ' B ' and ' C ' tubes to B.S. 1387.
Close taper nipples are charged as exact length barrel nipples.
For List Prices and Notes, see pages 8 to 10.

Elbows, Tees and
Crosses, Male, Equal

MALE ELBOW

MALE TEE

MALE CROSS

Elbows, Tees and Crosses, Male, Equal (B.S. 1740)

All dimensions are in inches

Nominal size of outlets	Minimum length centre to face A	Plus tolerance on dimension A
$\frac{1}{2}$	$3\frac{1}{2}$	$\frac{5}{16}$
$\frac{3}{4}$	$3\frac{3}{4}$	$\frac{5}{16}$
1	4	$\frac{5}{16}$
$1\frac{1}{4}$	$4\frac{1}{4}$	$\frac{5}{16}$
$1\frac{1}{2}$	$4\frac{1}{2}$	$\frac{5}{16}$
2	5	$\frac{5}{16}$
$2\frac{1}{2}$	$5\frac{1}{2}$	$\frac{5}{16}$
3	6	$\frac{5}{16}$
$3\frac{1}{2}$	$6\frac{1}{2}$	$\frac{3}{8}$
4	7	$\frac{3}{8}$
5	8	$\frac{3}{8}$
6	9	$\frac{3}{8}$

NOTE.—Made from welded or seamless tube, not thinner than that specified in B.S. 1387 for Class ' C. '

For outside diameters, see page 38.

Prices on application.

'Y' Pieces and
Angle Tees, Male, Equal

MALE 'Y' PIECE

MALE ANGLE TEE

'Y' Pieces and Angle Tees, Male, Equal (B.S. 1740)

All dimensions are in inches

Nominal size of outlets	Minimum length centre to face A	Plus tolerance on dimension A	Minimum length centre to face B	Plus tolerance on dimension B
$\frac{1}{2}$	$4\frac{3}{4}$	$\frac{5}{16}$	$2\frac{1}{4}$	$\frac{3}{16}$
$\frac{3}{4}$	$5\frac{1}{8}$	$\frac{5}{16}$	$2\frac{1}{2}$	$\frac{3}{16}$
1	$5\frac{7}{8}$	$\frac{5}{16}$	$2\frac{3}{4}$	$\frac{1}{4}$
$1\frac{1}{4}$	$6\frac{1}{4}$	$\frac{3}{8}$	$2\frac{7}{8}$	$\frac{1}{4}$
$1\frac{1}{2}$	$6\frac{5}{8}$	$\frac{3}{8}$	3	$\frac{1}{4}$
2	$7\frac{3}{8}$	$\frac{3}{8}$	$3\frac{1}{4}$	$\frac{5}{16}$
$2\frac{1}{2}$	8	$\frac{3}{8}$	$3\frac{1}{2}$	$\frac{5}{16}$
3	$8\frac{3}{4}$	$\frac{3}{8}$	4	$\frac{5}{16}$
$3\frac{1}{2}$	$9\frac{1}{4}$	$\frac{3}{8}$	4	$\frac{5}{16}$
4	$10\frac{1}{4}$	$\frac{3}{8}$	$4\frac{1}{4}$	$\frac{5}{16}$
5	$11\frac{3}{4}$	$\frac{3}{8}$	$4\frac{1}{2}$	$\frac{5}{16}$
6	$13\frac{1}{4}$	$\frac{3}{8}$	5	$\frac{5}{16}$

NOTE.—Made from welded or seamless tube, not thinner than that specified in B.S. 1387 for Class 'C.'

For outside diameters, see page 38.

Prices on application.

Twin Elbows and Sweep Tees, Male, Equal

MALE TWIN ELBOW

MALE SWEEP TEE

Twin Elbows and Sweep Tees, Male, Equal (B.S. 1740)
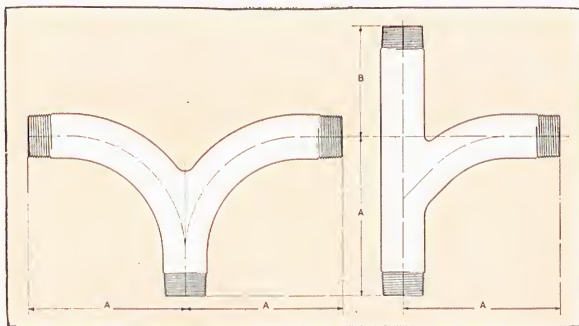
All dimensions are in inches

Nominal size of outlets	Minimum length centre to face A	Plus tolerance on dimension A	Minimum length centre to face B	Plus tolerance on dimension B
$\frac{1}{2}$	$3\frac{1}{4}$	$\frac{5}{16}$	$3\frac{3}{8}$	$\frac{5}{16}$
$\frac{3}{4}$	4	$\frac{5}{16}$	$3\frac{5}{8}$	$\frac{5}{16}$
1	$4\frac{3}{4}$	$\frac{5}{16}$	$3\frac{7}{8}$	$\frac{5}{16}$
$1\frac{1}{4}$	6	$\frac{5}{16}$	$4\frac{1}{8}$	$\frac{5}{16}$
$1\frac{1}{2}$	$6\frac{3}{4}$	$\frac{3}{8}$	$4\frac{3}{8}$	$\frac{5}{16}$
2	8	$\frac{3}{8}$	$4\frac{7}{8}$	$\frac{5}{16}$
$2\frac{1}{2}$	$9\frac{3}{4}$	$\frac{3}{8}$	$5\frac{1}{4}$	$\frac{5}{16}$
3	$11\frac{1}{2}$	$\frac{3}{8}$	$5\frac{3}{4}$	$\frac{5}{16}$
$3\frac{1}{2}$	$13\frac{1}{4}$	$\frac{3}{8}$	$6\frac{1}{4}$	$\frac{3}{8}$
4	15	$\frac{3}{8}$	$6\frac{1}{4}$	$\frac{3}{8}$
5	21	$\frac{3}{8}$	$7\frac{3}{4}$	$\frac{3}{8}$
6	$24\frac{1}{2}$	$\frac{3}{8}$	$8\frac{3}{4}$	$\frac{3}{8}$

NOTE. Made from welded or seamless tube, not thinner than that specified in B.S. 1387, for Class 'C.'

For outside diameters, see page 38.

Prices on application.

Bushings (B.S. 1740)
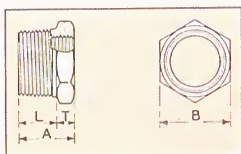
All dimensions are in inches

Nominal size male thread	Minimum length of thread for basic gauge length plus die clearance L	Thickness of hexagon T	Minimum overall length A	Plus tolerance on dimension A	Width across flats of hexagon B
$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{1}{16}$	$\frac{39}{64}$
$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{16}$	$\frac{13}{16}$	$\frac{1}{16}$	$\frac{45}{64}$
$\frac{1}{2}$	$\frac{11}{16}$	$\frac{5}{16}$	1	$\frac{1}{16}$	$\frac{29}{32}$
$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{8}$	$1\frac{1}{8}$	$\frac{1}{8}$	$1\frac{3}{32}$
1	$\frac{13}{16}$	$\frac{3}{8}$	$1\frac{3}{16}$	$\frac{1}{8}$	$1\frac{25}{64}$
$1\frac{1}{4}$	$\frac{15}{16}$	$\frac{7}{16}$	$1\frac{3}{8}$	$\frac{1}{8}$	$1\frac{55}{64}$
$1\frac{1}{2}$	$\frac{15}{16}$	$\frac{1}{2}$	$1\frac{7}{16}$	$\frac{1}{8}$	$2\frac{3}{64}$
2	$1\frac{1}{16}$	$\frac{9}{16}$	$1\frac{5}{8}$	$\frac{3}{16}$	$2\frac{13}{32}$
$2\frac{1}{2}$	$1\frac{1}{4}$	$\frac{5}{8}$	$1\frac{7}{8}$	$\frac{3}{16}$	$3\frac{1}{8}$
3	$1\frac{3}{8}$	$\frac{3}{4}$	$2\frac{1}{8}$	$\frac{3}{16}$	$3\frac{5}{8}$
$3\frac{1}{2}$	$1\frac{7}{16}$	$\frac{3}{4}$	$2\frac{3}{16}$	$\frac{3}{16}$	$4\frac{1}{8}$
4	$1\frac{9}{16}$	$\frac{7}{8}$	$2\frac{7}{16}$	$\frac{3}{16}$	$4\frac{5}{8}$
5	$1\frac{3}{4}$	1	$2\frac{3}{4}$	$\frac{1}{4}$	$5\frac{5}{8}$
6	$1\frac{3}{4}$	1	$2\frac{3}{4}$	$\frac{1}{4}$	$6\frac{5}{8}$

NOTE.—The minimum length of parallel thread conforms to the minimum length of useful thread as given in Table on page 39, dimension M. Prices on application.

Nipples, Hexagon, Equal
(B.S. 1740)
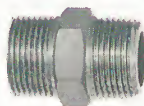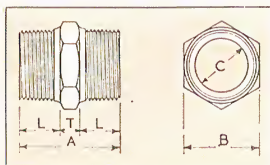
All dimensions are in inches

Nom. size	Min. length of thread for basic gauge length plus die clearance L	Thickness of hexagon T	Min. overall length A	Plus tolerance on dimension A	Max. diam. of bore C	Width across flats of hexagon B
$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{4}$	1	$\frac{1}{16}$	$\frac{7}{32}$	$\frac{33}{64}$
$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{4}$	$1\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{39}{64}$
$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{16}$	$1\frac{5}{16}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{45}{64}$
$\frac{1}{2}$	$\frac{11}{16}$	$\frac{5}{16}$	$1\frac{11}{16}$	$\frac{3}{16}$	$\frac{1}{2}$	$\frac{29}{32}$
$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{8}$	$1\frac{7}{8}$	$\frac{3}{16}$	$\frac{3}{4}$	$1\frac{3}{32}$
1	$\frac{13}{16}$	$\frac{3}{8}$	2	$\frac{3}{16}$	1	$1\frac{25}{64}$
$1\frac{1}{4}$	$\frac{15}{16}$	$\frac{7}{16}$	$2\frac{5}{16}$	$\frac{3}{16}$	$1\frac{1}{4}$	$1\frac{55}{64}$
$1\frac{1}{2}$	$\frac{15}{16}$	$\frac{1}{2}$	$2\frac{3}{8}$	$\frac{3}{16}$	$1\frac{1}{2}$	$2\frac{3}{64}$
2	$1\frac{1}{16}$	$\frac{9}{16}$	$2\frac{11}{16}$	$\frac{1}{4}$	2	$2\frac{13}{32}$
$2\frac{1}{2}$	$1\frac{1}{4}$	$\frac{5}{8}$	$3\frac{1}{8}$	$\frac{5}{16}$	$2\frac{1}{2}$	$3\frac{1}{8}$
3	$1\frac{3}{8}$	$\frac{3}{4}$	$3\frac{1}{2}$	$\frac{5}{16}$	3	$3\frac{5}{8}$
$3\frac{1}{2}$	$1\frac{7}{16}$	$\frac{3}{4}$	$3\frac{5}{8}$	$\frac{5}{16}$	$3\frac{1}{2}$	$4\frac{1}{8}$
4	$1\frac{9}{16}$	$\frac{7}{8}$	4	$\frac{5}{16}$	4	$4\frac{5}{8}$
5	$1\frac{3}{4}$	1	$4\frac{1}{2}$	$\frac{5}{16}$	5	$5\frac{5}{8}$
6	$1\frac{3}{4}$	1	$4\frac{1}{2}$	$\frac{5}{16}$	6	$6\frac{5}{8}$

Prices on application.

Union Bends (B.S. 1740)
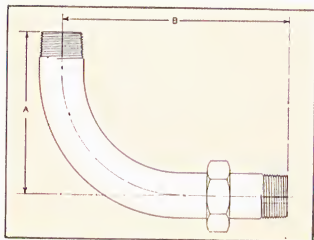
All dimensions are in inches

Nominal size of outlet	Minimum length centre to face A	Plus tolerance on dimension A	Minimum length centre to face B	Plus tolerance on dimension B
$\frac{1}{8}$	$2\frac{1}{8}$	$\frac{3}{8}$	4	$\frac{5}{8}$
$\frac{1}{4}$	$2\frac{1}{2}$	$\frac{3}{8}$	$4\frac{1}{2}$	$\frac{5}{8}$
$\frac{3}{8}$	$2\frac{7}{8}$	$\frac{1}{2}$	5	$\frac{5}{8}$
$\frac{1}{2}$	$3\frac{1}{4}$	$\frac{5}{8}$	$5\frac{1}{2}$	$\frac{5}{8}$
$\frac{3}{4}$	4	$\frac{5}{8}$	$6\frac{3}{8}$	$\frac{3}{4}$
1	$4\frac{3}{4}$	$\frac{5}{8}$	$7\frac{1}{4}$	$\frac{3}{4}$
$1\frac{1}{4}$	6	$\frac{5}{8}$	$8\frac{5}{8}$	$\frac{3}{4}$
$1\frac{1}{2}$	$6\frac{3}{4}$	$\frac{3}{4}$	$9\frac{1}{2}$	$\frac{3}{4}$
2	8	$\frac{3}{4}$	11	$\frac{3}{4}$
$2\frac{1}{2}$	$9\frac{3}{4}$	$\frac{3}{4}$	13	$\frac{3}{4}$
3	$11\frac{1}{2}$	$\frac{3}{4}$	15	$\frac{3}{4}$

NOTE 1.—Bodies made from Class ' C ' tube to B.S. 1387.

NOTE 2.—Unions are normally supplied with flat seats and fitted with a washer. Other types of seating are obtainable, if required.

For outside diameters, see page 38.

For List Prices and Notes, see pages 8 to 10.

Pipe Unions (B.S. 1740)
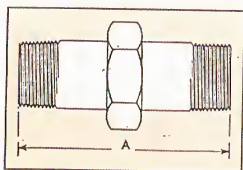
All dimensions are in inches

Nominal size of outlet	Minimum length A	Plus tolerance on dimension A
$\frac{1}{8}$	$3\frac{3}{4}$	$\frac{5}{8}$
$\frac{1}{4}$	4	$\frac{5}{8}$
$\frac{3}{8}$	$4\frac{1}{4}$	$\frac{5}{8}$
$\frac{1}{2}$	$4\frac{1}{2}$	$\frac{5}{8}$
$\frac{3}{4}$	$4\frac{3}{4}$	$\frac{5}{8}$
1	5	$\frac{5}{8}$
$1\frac{1}{4}$	$5\frac{1}{4}$	$\frac{5}{8}$
$1\frac{1}{2}$	$5\frac{1}{2}$	$\frac{5}{8}$
2	6	$\frac{5}{8}$
$2\frac{1}{2}$	$6\frac{1}{2}$	$\frac{3}{4}$
3	7	$\frac{3}{4}$
$3\frac{1}{2}$	$7\frac{1}{2}$	$\frac{3}{4}$
4	8	$\frac{3}{4}$
5	$8\frac{1}{2}$	$\frac{3}{4}$
6	9	$\frac{3}{4}$

NOTE 1.—Body thickness to conform to Class ' C ' tube to B.S. 1387.

NOTE 2.—Unions are normally supplied with flat seats and fitted with a washer. Other types of seating are obtainable, if required.

For outside diameters, see page 38.

For List Prices and Notes, see pages 8 to 10.

Socket Unions (B.S. 1740)

All dimensions are in inches

Nominal size of outlet	Minimum length A	Plus tolerance on dimension A
$\frac{1}{8}$	$1\frac{1}{2}$	$\frac{1}{4}$
$\frac{1}{4}$	$1\frac{3}{4}$	$\frac{3}{8}$
$\frac{3}{8}$	2	$\frac{3}{8}$
$\frac{1}{2}$	$2\frac{1}{4}$	$\frac{3}{8}$
$\frac{3}{4}$	$2\frac{5}{8}$	$\frac{1}{2}$
1	3	$\frac{1}{2}$
$1\frac{1}{4}$	$3\frac{3}{8}$	$\frac{5}{8}$
$1\frac{1}{2}$	$3\frac{7}{8}$	$\frac{5}{8}$
2	$4\frac{3}{8}$	$\frac{5}{8}$
$2\frac{1}{2}$	$4\frac{3}{4}$	$\frac{5}{8}$
3	$5\frac{1}{4}$	$\frac{5}{8}$
$3\frac{1}{2}$	$5\frac{3}{4}$	$\frac{5}{8}$
4	$6\frac{1}{4}$	$\frac{3}{4}$
5	$7\frac{1}{4}$	$\frac{3}{4}$
6	$8\frac{1}{4}$	$\frac{3}{4}$

NOTE.—Unions are normally supplied with flat seats and fitted with a washer. Other types of seating are obtainable, if required.

For outside diameters, see page 38.

For List Prices and Notes, see pages 8 to 10.

All Steel Socket Unions

(DOUBLE ' V ' FACE)
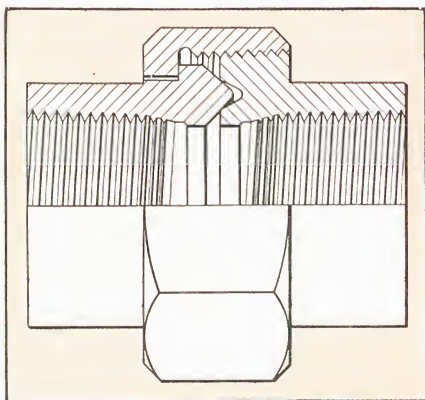
Size .. .. in.	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$*	$1\frac{1}{2}$*	2*
Overall Length in.	$1\frac{3}{4}$	$2\frac{1}{8}$	$2\frac{1}{2}$	$2\frac{7}{8}$	$3\frac{5}{16}$	$3\frac{11}{16}$	4	$4\frac{1}{2}$
Outside Diameter ,,	$\frac{27}{32}$	$1\frac{1}{32}$	$1\frac{7}{32}$	$1\frac{15}{32}$	$1\frac{25}{32}$	$2\frac{5}{32}$	$2\frac{13}{32}$	$2\frac{29}{32}$

* Ribbed round nuts in place of hexagon.

This All Steel Forged Socket Union is specially designed for use with high pressure steam and is extremely useful where a stronger union than the standard patterns Nos. 10 and 11, listed on pages 8 and 9, is required. It is ordinarily supplied taper screwed and sherardized.

Prices will be quoted on application.

Cast Iron Main Cocks
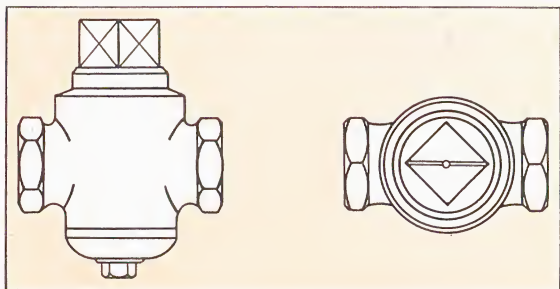
All dimensions are in inches

Nom. Bore	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3
Length, face to face ..	$2\frac{1}{2}$	3	$3\frac{3}{4}$	4	$4\frac{1}{2}$	5	$5\frac{1}{2}$	6

Prices on application.

All main cocks have port marks as illustrated but are not stopped unless specially ordered so.

An extra charge is made for stopped cocks.

Syphon Boxes
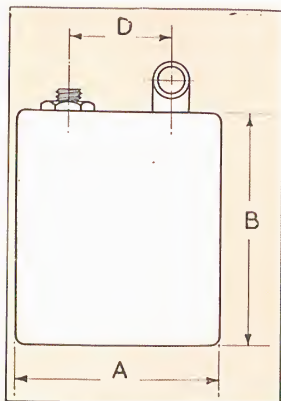
Nominal size in quarts		8	4	3	2	1	1*
Outside diameter of body	A	10	8	8	$6\frac{3}{4}$	5	5
Depth of Body	B	$10\frac{3}{8}$	$8\frac{7}{8}$	$6\frac{3}{4}$	$6\frac{3}{8}$	6	6
Size of Tee and Dip Tube		$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{2}$
Centre of Tee to Centre of Dip Tube	D	$5\frac{5}{8}$	4	4	$3\frac{3}{4}$	$2\frac{1}{2}$	$2\frac{1}{2}$

All dimensions are in inches except where otherwise stated.
* This item is not normally stocked.
For Price List and Notes, see pages 8 to 10.

Seamless Steel
Butt-welding Pipe Fittings
to B.S. 1965

Produced, except for caps, from S & L Seamless Steel Tubes by the most modern and efficient process, backed by extensive experience in the manufacture of Welding Fittings for the Oil Industry, S & L STEEL WELDING FITTINGS for use with Tubes to B.S. 1387 Classes ' B' and ' C' are of particular interest to :—

HEATING ENGINEERS

CHEMICAL ENGINEERS

REFRIGERATION ENGINEERS

SHIPBUILDERS and SHIP REPAIRERS

and to

GENERAL INDUSTRIAL USERS

The advantages of using S & L STEEL WELDING FITTINGS are :—

SIMPLIFIED DESIGN

EASY ALIGNMENT AND WELDING

SPACE SAVING

EASE OF ASSEMBLY ON SITE

SAVING TIME BY USING STANDARD

FITTINGS FROM STOCK

NO HOT OR COLD BENDING

NO JOINT MAINTENANCE

EASY INSULATION

B.S. 1965 covers seamless steel butt-welding pipe fittings for general purposes but for this catalogue details of those suitable for use with tubes to B.S. 1387 Classes ' B' and ' C' are given.

Seamless Steel Butt-welding Pipe Fittings

SCOPE

This specification applies to seamless (forged) carbon steel butt-welding pipe fittings for general purposes. It covers 90° elbows; 45° elbows; return bends (180°); concentric reducers; eccentric reducers and caps.*

MATERIALS AND METHOD OF MANUFACTURE

The fittings shall be seamless and shall, except for caps, be forged from pipes complying with the requirements of B.S. 806, Class B.

Unless otherwise agreed between the purchaser and the manufacturer, caps shall be made from plate complying with the requirements of B.S. 14.

CAPS

The closed ends of caps shall be semi ellipsoidal, the minor axis being half the major axis.

PRESSURE AND TEMPERATURE RATINGS

Pressure and temperature ratings of fittings shall be based on the same permissible stresses as are specified in B.S. 806 for Class B pipes.

NOTE.—When used with B.S. 1387 tubes the maximum limits applicable to the tubes, i.e. 300 lb. per sq. in. and 500°F., apply to the system as a whole.

*Branch bends, which are shown on pages 80 and 81, are not covered by B.S. 1965, but they comply with the requirements of that standard.

DIMENSIONS OF FITTINGS

The dimensions of fittings shall be as given in the table on page 81.

TOLERANCES

The actual thickness of the fittings at any point shall not be less than $87\frac{1}{2}\%$ of the specified thickness.

The tolerances on the other dimensions shall be:—

Tolerances at welding ends on	Nominal Bores				
	$\frac{1}{2}$ to $1\frac{1}{4}$ in. inclusive	$1\frac{1}{2}$ to $2\frac{1}{2}$ in. inclusive	3 in.	4 in.	5 and 6 in.
Outside diameter ..	$+\frac{1}{32}$ $-\frac{1}{64}$	$+\frac{1}{16}$ $-\frac{1}{32}$	$\pm\frac{1}{16}$	$\pm\frac{1}{16}$	$+\frac{3}{32}$ $-\frac{1}{16}$
Bore *	$\pm\frac{1}{32}$	$\pm\frac{1}{32}$	$\pm\frac{1}{16}$	$\pm\frac{1}{16}$	$\pm\frac{1}{16}$
ELBOWS Centre to face—A or B	$\pm\frac{1}{16}$	$\pm\frac{1}{16}$	$\pm\frac{1}{16}$	$\pm\frac{1}{8}$	$\pm\frac{1}{8}$
RETURN BENDS Centre to Centre—O ..	$\pm\frac{1}{8}$	$\pm\frac{1}{4}$	$\pm\frac{1}{4}$	$\pm\frac{1}{4}$	$\pm\frac{1}{4}$
Back to face K ..	$\pm\frac{1}{4}$	$\pm\frac{1}{4}$	$\pm\frac{1}{4}$	$\pm\frac{1}{4}$	$\pm\frac{1}{4}$
Alignment F ..	$\pm\frac{1}{32}$	$\pm\frac{3}{32}$	$\pm\frac{3}{32}$	$\pm\frac{1}{32}$	$\pm\frac{1}{32}$
REDUCERS End to end L ..	$\pm\frac{1}{16}$	$\pm\frac{1}{16}$	$\pm\frac{1}{16}$	$\pm\frac{1}{16}$	$\pm\frac{1}{16}$
CAPS End to face E ..	$\pm\frac{1}{8}$	$\pm\frac{1}{8}$	$\pm\frac{1}{8}$	$\pm\frac{1}{8}$	$\pm\frac{1}{4}$

* Bore means the outside diameter less twice the thickness, NOT the Nom. Bore.

PREPARATION FOR WELDING

Unless otherwise specified, the angle of bevel on fittings $\frac{3}{16}$ in. thick and over shall comply with that shown below.
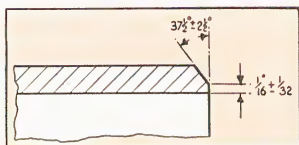
Welding ends having a thickness less than $\frac{3}{16}$ in. thick shall be square unless otherwise agreed.

WORKMANSHIP AND FINISH

Fittings shall be free from injurious defects, and shall have a workmanlike finish.

MARKING

Each fitting shall be stencilled or otherwise suitably marked with the following :—

(a) Manufacturer's name or trade mark.
(b) Nominal bore (in the case of 6 in. nominal bore the outside diameter shall also be given).
(c) Thickness.
(d) B.S. 1965.

NOTE.—The markings given in (b) and (c) above may be waived on fittings $1\frac{1}{4}$ in. nominal bore and smaller.

STOCKS

Stocks are held at S & L warehouses ; for addresses see pages 2 and 3.

Seamless Steel
Butt-welding Pipe Fittings

'S & L' steel butt-welding pipe fittings to B.S. 1965; for use with steel tubes to B.S. 1387, Classes 'B' and 'C.'

Note: The branch bend, shown without a transfer, is not covered by B.S. 1965.

Seamless Steel
Butt-welding Pipe Fittings

90° ELBOW   45° ELBOW   RETURN BEND

REDUCER CONCENTRIC   REDUCER ECCENTRIC   CAP   BRANCH BEND †
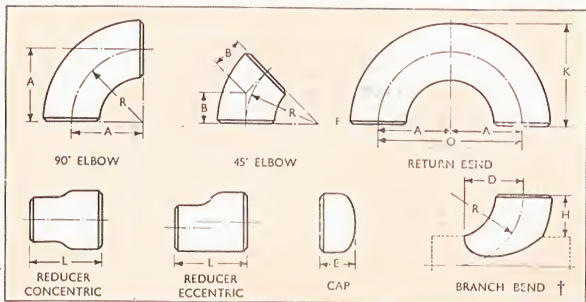
All dimensions are in inches

*Nom. Dia.	Out. Dia.	Centre to End A	Centre to End B	Centre to Centre O	Back to Face K	Radius R	Length L	Height E	Height of Branch H	Centre to Toe D
½	27/32	1½	—	3	1 10/16	1½	—	—	1⅛‡	1⅛
¾	1 1/16	1½	—	3	2 1/16	1¾	—	—	1 ‡	1⅛
1	1 11/32	1½	—	3	2 3/16	1½	—	—	7/8 ‡	1 3/16
1¼	1 11/16	1⅞	—	3¾	2⅜	1⅞	—	—	1⅛‡	1⅛
1½	1 29/32	2¼	1⅛	4½	3¼	2¼	—	1½	1¾‡	1⅜
2	2⅜	3	1⅜	6	4 3/16	3	3	1½	1¾	2⅜
2½	3	3¾	1¾	7½	5¼	3¾	3½	1½	2¼	3
3	3½	4½	2	9	6¼	4½	3½	2	2¾	3½
4	4½	6	2½	12	8¼	6	4	2½	3⅝	4⅝
5	5½	7½	3¼	15	10¼	7½	5	3	4½	5⅞
6	6½	9	3¾	18	12 6/16	9	5½	3½	6	7⅞

    * For reducers nom. bore refers to larger end.
    † Not covered by B.S. 1965.
    ‡ Supplied only in Class B thickness.
    Prices on application.

Branch bends are suitable for use on mains of same size or larger as under

Nominal bore of Branch ..	½ to 1	1¼ and 1½	2 to 6
Maximum size of main ..	3	4	6

Standard Dimensions of Wrought Flanges for Low Pressure Services

NOTES.

Table ' A ' flanges are customarily used in the gas industry for working pressures up to 30 lb. per square inch.

Table ' D ' flanges are designed for moderate gas pressures, water pressures up to 175 lb. per square inch, and steam pressures up to 50 lb. per square inch.

Table ' E ' flanges are designed for steam pressures over 50 lb. per square inch up to 100 lb. per square inch.

For higher pressures we supply flanges in accordance with the B.S. Tables appropriate to the working conditions.

It is recommended that the working conditions or the B.S. Flange Table reference letter be given on all enquiries and orders.

Table ' E ' flanges are faced; Table ' D ' flanges are not faced, unless specially ordered faced, in which case an extra will be charged.

Flanges are not drilled unless this is specially ordered; drilling of flanges is charged extra.

For bolts $\frac{5}{8}$ in. diameter and under holes are drilled $\frac{1}{16}$ in. larger, and for bolts over $\frac{5}{8}$ in. diameter holes are drilled $\frac{1}{8}$ in. larger.

Flanges of larger diameter than the standard for the screwing size ordered will be charged at the gross price of the standard flange of the diameter required. In addition, flanges varying from the standard in diameter will be charged an extra $5\frac{3}{4}\%$ gross for every inch or part of an inch either over or under the standard diameter.

It is strongly recommended that standard flanges be used wherever possible.

Flanges required of greater thickness than shown in Table ' E ' are charged at an extra of $5\frac{3}{4}\%$ gross for every $\frac{1}{16}$ in. or part thereof in excess of Table ' E ' thicknesses, up to and including Table ' H.'

For List Prices, see pages 8 and 9.

Standard Dimensions of Wrought Flanges for Low Pressure Services to B.S. 10

No18.

Nom. Bore of Tube	Diam. of Flange	Diam. of Bolt Circle	Min. Diam. of Boss	Height of Boss	Tables B, C, or D † (not faced)		Table E (faced)	
					Thickness of Flange	No. and Size of Bolts	Thickness of Flange	No. and Size of Bolts
*⅛	2¼	1⅝	¾	¼	⅛	4—5/16	—	4—5/16
*¼	2½	1¾	13/16	⅛	⅛	4—5/16	3/32	4—5/16
*⅜	3	2⅛	1	9/32	5/32	4—⅜	¼	4—⅜
½	3¼	2⅝	1 11/32	⅜	3/16	4—½	¼	4—½
¾	4	2⅞	1 9/16	7/16	3/16	4—½	¼	4—½
1	4½	3¼	1 15/16	7/16	3/16	4—½	9/32	4—½
1¼	4¾	3 7/16	2 3/16	7/16	¼	4—½	5/16	4—½
1½	5¼	3⅞	2½	½	¼	4—½	11/32	4—½
2	6	4½	2 15/16	½	5/16	4—⅝	⅜	4—⅝
2½	6½	5	3 9/16	⅝	5/16	4—⅝	13/32	4—⅝
3	7¼	5¾	4¼	⅝	⅜	4—⅝	7/16	4—⅝
3½	8	6½	4⅞	11/16	⅜	4—⅝	15/32	8—⅝
4	8½	7	5¾	¾	⅜	4—⅝	½	8—⅝
5	10	8¼	6½	¾	½	8—⅝†	9/16	8—⅝
6	11	9¼	7⅞	¾	½	8—⅝†	11/16	8—¾

* These sizes do not appear in B.S. 10, but are commercially standardized.
† Table A is the same as Tables B, C and D, except that it shows 4–⅝ in. bolts. instead of eight for both 5 in. and 6 in. sizes.
All dimensions are in inches and are approximate.
Boss dimensions apply also to Flanges to B.S. Tables F and H, details of which are given on pages 84 and 85.
See notes opposite.

Wrought Steel Flanges to B.S. 10

(For Land Use)

100 lb.   **TABLE F**   **150 lb.**

(ABRIDGED)

For working Steam pressures above 100 lb. and up to 150 lb. per square inch.

1	1 (a)	2	3	4	5	6 (d)
Nominal Pipe Size in.	Actual Outside Diam. of Wrought Pipe in.	Diam. of Flange in.	Diam. of Bolt Circle in.	Number of Bolts	Diam. of Bolts in	Thickness of Flange (Stamped or Forged) in.
$\frac{1}{2}$	$\frac{27}{32}$	$3\frac{3}{4}$	$2\frac{5}{8}$	4	$\frac{1}{2}$	$\frac{3}{8}$
$\frac{3}{4}$	$1\frac{1}{16}$	4	$2\frac{7}{8}$	4	$\frac{1}{2}$	$\frac{3}{8}$
1	$1\frac{11}{32}$	$4\frac{3}{4}$	$3\frac{7}{16}$	4	$\frac{5}{8}$	$\frac{3}{8}$
$1\frac{1}{4}$	$1\frac{11}{16}$	$5\frac{1}{4}$	$3\frac{7}{8}$	4	$\frac{5}{8}$	$\frac{1}{2}$
$1\frac{1}{2}$	$1\frac{29}{32}$	$5\frac{1}{2}$	$4\frac{1}{8}$	4	$\frac{5}{8}$	$\frac{1}{2}$
2	$2\frac{3}{8}$	$6\frac{1}{2}$	5	4	$\frac{5}{8}$	$\frac{5}{8}$
$2\frac{1}{2}$	3	$7\frac{1}{4}$	$5\frac{3}{4}$	8	$\frac{5}{8}$	$\frac{5}{8}$
3	$3\frac{1}{2}$	8	$6\frac{1}{2}$	8	$\frac{5}{8}$	$\frac{5}{8}$
$3\frac{1}{2}$	4	$8\frac{1}{2}$	7	8	$\frac{5}{8}$	$\frac{3}{4}$
4	$4\frac{1}{2}$	9	$7\frac{1}{2}$	8	$\frac{5}{8}$	$\frac{3}{4}$
5	$5\frac{1}{2}$	11	$9\frac{1}{4}$	8	$\frac{3}{4}$	$\frac{7}{8}$
6	$6\frac{1}{2}$	12	$10\frac{1}{4}$	12	$\frac{3}{4}$	$\frac{7}{8}$

Thicknesses.—The thicknesses given in this Table include a raised face of not more than $\frac{1}{16}$ inch high if such be used.

Bolt Holes.—For $\frac{1}{2}$ inch and $\frac{5}{8}$ inch bolts the diameters of the holes to be $\frac{1}{16}$ inch larger than the diameters of the bolts, and for larger sizes of bolts $\frac{1}{8}$ inch. Bolt holes to be drilled off centre lines.

Wrought Steel Flanges to B.S. 10

(For Land Use)

150 lb. | **TABLE H** | **250 lb.**

(ABRIDGED)

For working Steam pressures above 150 lb. and up to 250 lb. per square inch.

1	1 (a)	2	3	4	5	6 (e)
Nominal Pipe Size in.	Actual Outside Diam. of Wrought Pipe in.	Diam. of Flange in.	Diam. of Bolt Circle in.	Number of Bolts	Diam. of Bolts in.	Thickness of Flange (Stamped or Forged) in.
$\frac{1}{2}$	$\frac{27}{32}$	$4\frac{1}{2}$	$3\frac{1}{4}$	4	$\frac{5}{8}$	$\frac{1}{2}$
$\frac{3}{4}$	$1\frac{1}{16}$	$4\frac{1}{2}$	$3\frac{1}{2}$	4	$\frac{5}{8}$	$\frac{1}{2}$
1	$1\frac{11}{32}$	$4\frac{3}{4}$	$3\frac{7}{16}$	4	$\frac{5}{8}$	$\frac{9}{16}$
$1\frac{1}{4}$	$1\frac{11}{16}$	$5\frac{1}{4}$	$3\frac{7}{8}$	4	$\frac{5}{8}$	$\frac{11}{16}$
$1\frac{1}{2}$	$1\frac{29}{32}$	$5\frac{1}{2}$	$4\frac{1}{8}$	4	$\frac{5}{8}$	$\frac{11}{16}$
2	$2\frac{3}{8}$	$6\frac{1}{2}$	5	4	$\frac{5}{8}$	$\frac{3}{4}$
$2\frac{1}{2}$	3	$7\frac{1}{4}$	$5\frac{3}{4}$	8	$\frac{5}{8}$	$\frac{3}{4}$
3	$3\frac{1}{2}$	8	$6\frac{1}{2}$	8	$\frac{5}{8}$	$\frac{7}{8}$
$3\frac{1}{2}$	4	$8\frac{1}{2}$	7	8	$\frac{5}{8}$	$\frac{7}{8}$
4	$4\frac{1}{2}$	9	$7\frac{1}{2}$	8	$\frac{5}{8}$	1
5	$5\frac{1}{2}$	11	$9\frac{1}{4}$	8	$\frac{3}{4}$	$1\frac{1}{8}$
6	$6\frac{1}{2}$	12	$10\frac{1}{4}$	12	$\frac{3}{4}$	$1\frac{1}{8}$

Thicknesses.—The thicknesses given in this Table include a raised face of not more than $\frac{1}{16}$ inch high if such be used.

Bolt Holes.—For $\frac{1}{2}$ inch and $\frac{5}{8}$ inch bolts the diameters of the holes to be $\frac{1}{16}$ inch larger than the diameters of the bolts, and for larger sizes of bolts $\frac{1}{8}$ inch. Bolt holes to be drilled off centre lines.

Drilling of Flanges

TEE

BEND

VALVE
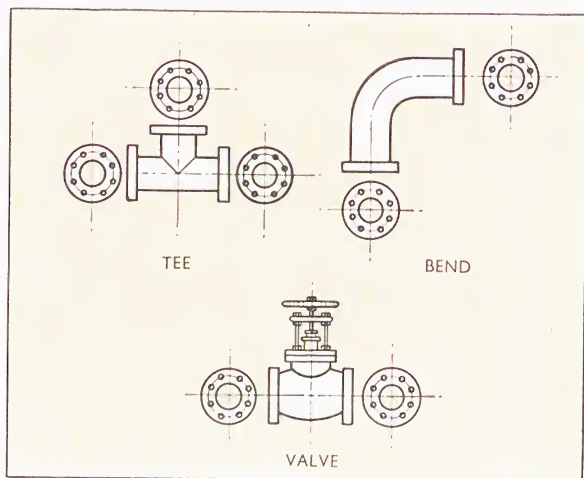
FLANGES, IF DRILLED, ARE DRILLED OFF
CENTRE LINES, AS ILLUSTRATED ABOVE,
UNLESS OTHERWISE SPECIFIED.

Holes are drilled $\frac{1}{16}$ in. larger than the bolt diameters
for bolts of $\frac{5}{8}$ in. diameter and under, and $\frac{1}{8}$ in. larger
for bolts over $\frac{5}{8}$ in. diameter.

Tubular Steel Clothes Posts

Tubular steel clothes posts are normally supplied of type A, as illustrated, that is with cross pin for planting in the earth or in concrete. If required they can be had of type B, with a socket for planting, the post itself being removable.

The upper ends of either type of post are closed hemispherically or by a cap.

The posts are made from steel tubes $1\frac{29}{32}''$ o.d., in three lengths 8'-0", 8'-6" and 9'-3".

Posts made from steel tubes $2\frac{3}{8}''$ o.d. and $1\frac{11}{16}''$ o.d., can be supplied if required.

Posts can be supplied galvanized if required.

Prices on application.

Type A

Type B

'S & L' steel scaffolding tubes in use for re-conditioning the Victoria Tower which is 75 feet square and 340 feet high.

Scaffolding Tubes

The use of steel scaffolding tubes is standard practice in building construction and repair, as centering for arches and to secure and support forms for concrete work.

In addition they are being used regularly for the construction of all kinds of temporary staging, and for temporary stands for spectators on ceremonial occasions and at sporting events.

Shipyards are also adopting tubular steel staging as a means of reducing costs, increasing efficiency, and lessening the risk of fire.

Scaffolding tubes are supplied in accordance with B.S. 1139 and particulars of the standard size are given below together with some relevant data.

Nominal Bore .. in.	$1\frac{1}{2}$
Approx. Outside diam. .. in.	$1\frac{29}{32}$
Thickness .. $\begin{cases} \text{S.W.G.} \\ \text{in.} \end{cases}$	8 / ·160
Weight per ft. .. .. lb.	2·988
Cross-sectional area .. in.²	·879
Moment of inertia (I) in.⁴	·339
Modulus of section (Z) in.³	·355
Radius of Gyration (R) .. in.	·621

Putlogs

Tubular steel putlogs are supplied to B.S. 1139 or to special requirements.

Perkins' Hot Water Tubes and
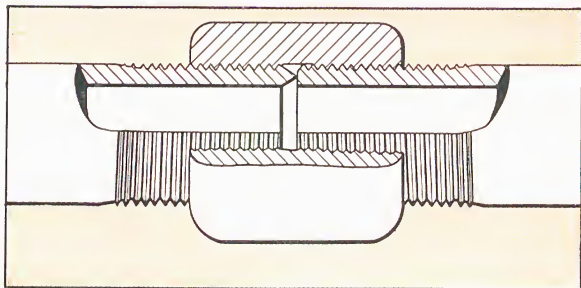
PARTICULARS OF TUBES

Screwing Size .. in.	$\frac{3}{4}$	1	$1\frac{1}{4}$
Out. Diam. of Tube in.	$1\frac{1}{16}$	$1\frac{5}{16}$	$1\frac{3}{4}$
Thickness, S.W.G. or in.	4G	4G	$\frac{1}{4}$
Out. Diam. of Socket in.	$1\frac{3}{4}$	2	$2\frac{3}{8}$
Length of Socket .. in.	$1\frac{3}{4}$	2	$2\frac{3}{8}$
Weight per foot (plain at end) .. .. lb.	2·06	2·68	4·01

The tubes are all coned and faced, screwed right and left hand Perkins' Thread, 15 threads per inch, and have suitable strong chambered sockets.

Unless otherwise specified they are supplied in long random lengths.

Each length is tested by hydraulic pressure to 4000 lb. per square inch.

Fittings for High Pressure
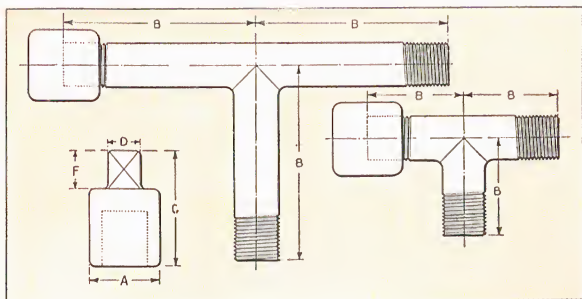
DIMENSIONS OF FITTINGS

Screwing Size .. in.			$\frac{3}{4}$	1	$1\frac{1}{4}$
Tee Centre to Face B	Long	in.	6	6	6
	Short	in.	3	3	3
Cap	Out. Dia. A	in.	$1\frac{5}{8}$	$1\frac{7}{8}$	$2\frac{1}{4}$
	Length C	in.	$2\frac{5}{8}$	3	$3\frac{1}{2}$
	Square D	in.	$\frac{3}{4}$	$\frac{7}{8}$	1
	Height F	in.	$\frac{7}{8}$	1	$1\frac{1}{8}$

Prices of tubes and fittings on application.

Gun-metal and Brass Valves and Cocks
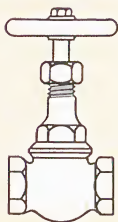
G.M. STEAM VALVE
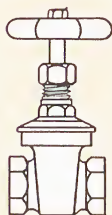
G.M. GATE VALVE

G.M. STEAM GLAND COCK

G.M. STEAM PLUG COCK
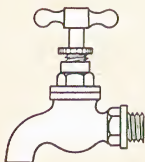
BIB COCK, ROUND CRUTCH
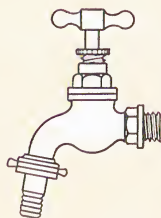
HOSE UNION BIB COCK

We shall be pleased to supply particulars of these and other types of brass and gun-metal goods on request.

Approximate Discharge from Screwed and Socketed Steel Pipes—Class B, B.S. 1387

DISCHARGE FROM PIPES OF 2 in. SIZE

Slope 1 in —	Discharge gall. per min.	Slope 1 in —	Discharge gall. per min.	Slope 1 in —	Discharge gall. per min.	Slope 1 in —	Discharge gall. per min.
10	50	130	13	700	5·5	2400	2·9
15	41	140	13	800	5·2	2600	2·8
20	35	150	12	900	4·9	2800	2·7
25	31	160	12	1000	4·6	3000	2·6
30	28	170	12	1100	4·4	3200	2·5
35	26	180	11	1200	4·2	3400	2·4
40	24	190	11	1300	4·0	3600	2·4
50	22	200	11	1400	3·9	3800	2·3
60	20	250	9·4	1500	3·7	4000	2·2
70	18	300	8·6	1600	3·6	4200	2·2
80	17	350	7·9	1700	3·5	4400	2·1
90	16	400	7·4	1800	3·4	4600	2·1
100	15	450	7·0	1900	3·3	4800	2·0
110	14	500	6·6	2000	3·2	5000	2·0
120	14	600	6·0	2200	3·0	6000	1·8

Discharges given are for long straight runs of new bitumen lined or galvanized steel pipe. Allowance should be made for joints and fittings.

PIPE FACTOR FOR OTHER SIZES

Size, in.	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
Factor ..	·045	·09	·18	·35	·5	1	1·95	3·10	4·57	6·45	11·5	18·5

Examples of Use.

The above table gives discharge in gallons per minute of water through 2 in. nominal bore steel pipe, i.e. 2 in. steel pipe, slope 1 in 1000 discharge=4·6 gallons per minute. For sizes other than 2 in. multiply the discharges shown by the pipe factor, i.e.,

½ in. steel pipe, slope 1 in 400, gallons per minute = $7·4 \times ·045 = ·33$.

Equivalents of Standard Wire Gauges

Standard Wire Gauge	Nearest Fractions of an inch	Decimals of an inch	Milli-metres	Standard Wire Gauge	Nearest Fractions of an inch	Decimals of an inch	Milli-metres
18	$\frac{3}{64}$	·048	1·219	9	$\frac{9}{64}$ full	·144	3·658
17	$\frac{3}{64}$ full	·056	1·422	8	$\frac{5}{32}$ full	·160	4·064
16	$\frac{1}{16}$	·064	1·626	7	$\frac{11}{64}$ full	·176	4·470
15	$\frac{1}{16}$ full	·072	1·829	6	$\frac{3}{16}$ full	·192	4·877
14	$\frac{5}{64}$	·080	2·032	5	$\frac{13}{64}$ full	·212	5·385
13	$\frac{3}{32}$	·092	2·337	4	$\frac{15}{64}$	·232	5·893
12	$\frac{3}{32}$ full	·104	2·642	3	$\frac{1}{4}$	·252	6·401
11	$\frac{7}{64}$ full	·116	2·946	2	$\frac{9}{32}$ bare	·276	7·010
10	$\frac{1}{8}$	·128	3·251	1	$\frac{19}{64}$ full	·300	7·620

Decimal Equivalents of Fractions of an inch

Fracts.	Decimals	Fracts.	Decimals	Fracts.	Decimals	Fracts.	Decimals
$\frac{1}{64}$	·015625	$\frac{17}{64}$	·265625	$\frac{33}{64}$	·515625	$\frac{49}{64}$	·765625
$\frac{1}{32}$	·03125	$\frac{9}{32}$	·28125	$\frac{17}{32}$	·53125	$\frac{25}{32}$	·78125
$\frac{3}{64}$	·046875	$\frac{19}{64}$	·296875	$\frac{35}{64}$	·546875	$\frac{51}{64}$	·796875
$\frac{1}{16}$	·0625	$\frac{5}{16}$	·3125	$\frac{9}{16}$	·5625	$\frac{13}{16}$	·8125
$\frac{5}{64}$	·078125	$\frac{21}{64}$	·328125	$\frac{37}{64}$	·578125	$\frac{53}{64}$	·828125
$\frac{3}{32}$	·09375	$\frac{11}{32}$	·34375	$\frac{19}{32}$	·59375	$\frac{27}{32}$	·84375
$\frac{7}{64}$	·109375	$\frac{23}{64}$	·359375	$\frac{39}{64}$	·609375	$\frac{55}{64}$	·859375
$\frac{1}{8}$	·125	$\frac{3}{8}$	·375	$\frac{5}{8}$	·625	$\frac{7}{8}$	·875
$\frac{9}{64}$	·140625	$\frac{25}{64}$	·390625	$\frac{41}{64}$	·640625	$\frac{57}{64}$	·890625
$\frac{5}{32}$	·15625	$\frac{13}{32}$	·40625	$\frac{21}{32}$	·65625	$\frac{29}{32}$	·90625
$\frac{11}{64}$	·171875	$\frac{27}{64}$	·421875	$\frac{43}{64}$	·671875	$\frac{59}{64}$	·921875
$\frac{3}{16}$	·1875	$\frac{7}{16}$	·4375	$\frac{11}{16}$	·6875	$\frac{15}{16}$	·9375
$\frac{13}{64}$	·203125	$\frac{29}{64}$	·453125	$\frac{45}{64}$	·703125	$\frac{61}{64}$	·953125
$\frac{7}{32}$	·21875	$\frac{15}{32}$	·46875	$\frac{23}{32}$	·71875	$\frac{31}{32}$	·96875
$\frac{15}{64}$	·234375	$\frac{31}{64}$	·484375	$\frac{47}{64}$	·734375	$\frac{63}{64}$	·984375
$\frac{1}{4}$	·25	$\frac{1}{2}$	·5	$\frac{3}{4}$	·75	1	1

Useful Constants for Calculating Approximate Weights

Material	Volume in Cubic inches per lb.	Weight in lb. per Cubic inch	K
Mild Steel	3·53	·283	10·6814
Wrought Iron ..	3·60	·278	10·472
Cast Iron	3·80	·263	9·92
Aluminium	10·26	·098	3·70
Brass	3·33	·300	11·32
Copper	3·14	·318	12·0
Lead	2·437	·410	15·47

The approximate weight ' W ' in lb. per lineal foot of a tube of any of the materials for which the constant K is tabulated is given by :—

$$W = K(D—t)t$$

where D is outside diameter, and t thickness of tube, in inches.

Factors for Converting British into Metric Units

Dimensions	British to Metric	Metric to British
Inches and millimetres	25·4	·03937
Feet and metres	·3048	3·281
Pounds and kilogrammes	·4536	2·205
Pounds per foot and kilogrammes per metre	1·4882	·67197
Pounds per square inch and kilogrammes per square centimetre ..	·0703	14·223

Laying small bore ' S & L ' screwed and socketed steel tubes, bitumen lined and ' Security ' wrapped, to carry farm water supplies.

Some Uses of Steel Tubes

While this catalogue gives particulars only of screwed and socketed steel tubes and associated fittings in sizes from $\frac{1}{8}$ to 6 inch nominal bore, we also manufacture steel tubes up to 72 inch nominal bore, together with accompanying fittings and specials. The photographs on the following pages, whilst showing only a few selected examples, give some idea of the numerous uses of steel tubes.

We are always willing to give customers the benefit of our experience in the use of steel tubes for any particular purpose within our scope.

'S & L' steel water main with Viking Johnson Couplings, showing how the flexibility of the Coupling allows a pipeline to be laid in a curve without the use of bends.
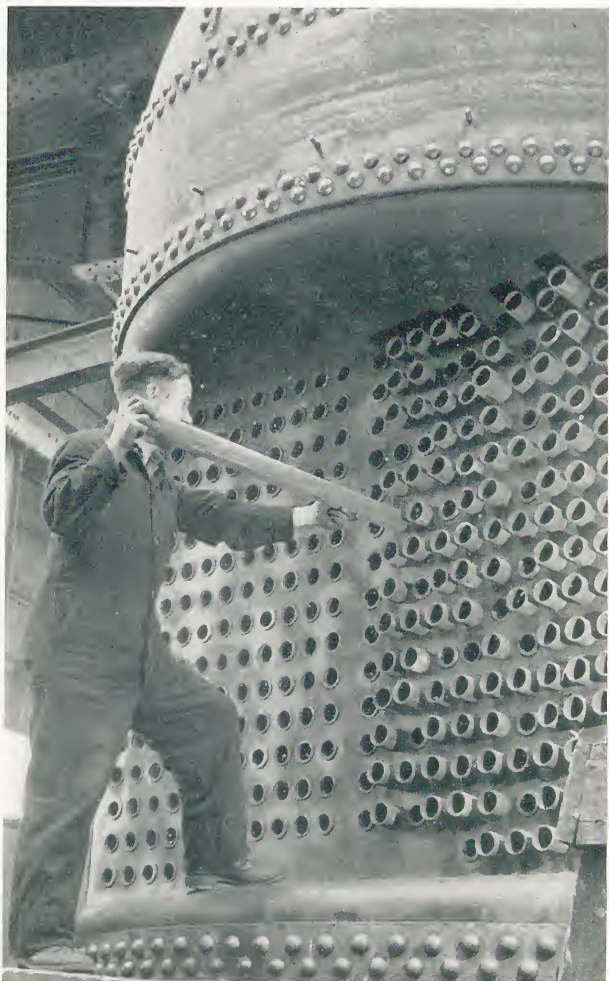
$2\frac{1}{2}$ inch o.d. ' S & L ' steel boiler tubes being used to tube a Cochran boiler.
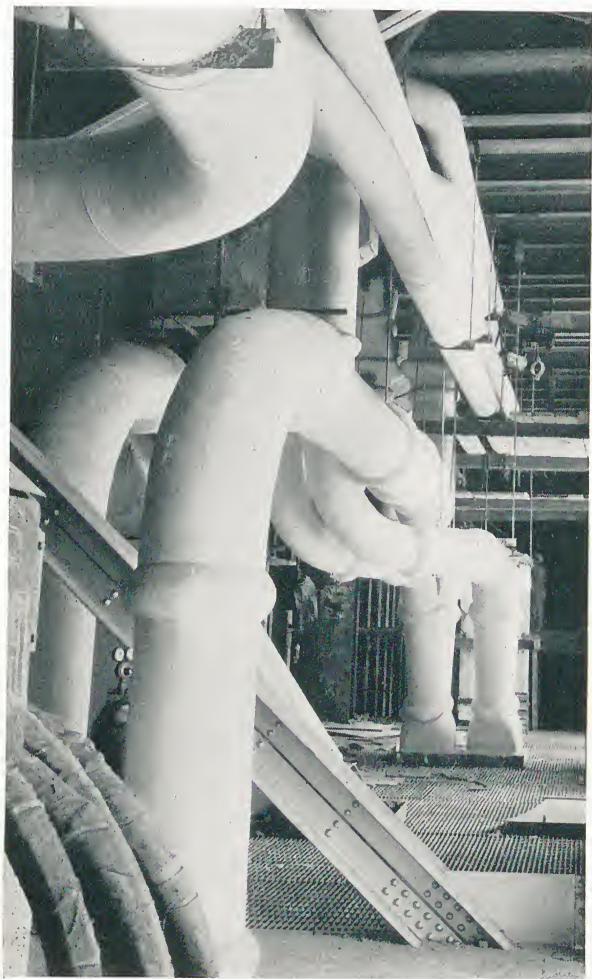
High pressure ' S & L ' steam and feed pipes installed in the Pyrmont Power
Station, Sydney, Australia. The steam pipes have a working pressure of
1,280 lb. per sq. in. at 950°F.

'S & L' tubular steel lighting columns having a mounting height of 25 ft.

18 inch ' S & L ' steel pipes with welded joints forming part of the South Wales gas grid.
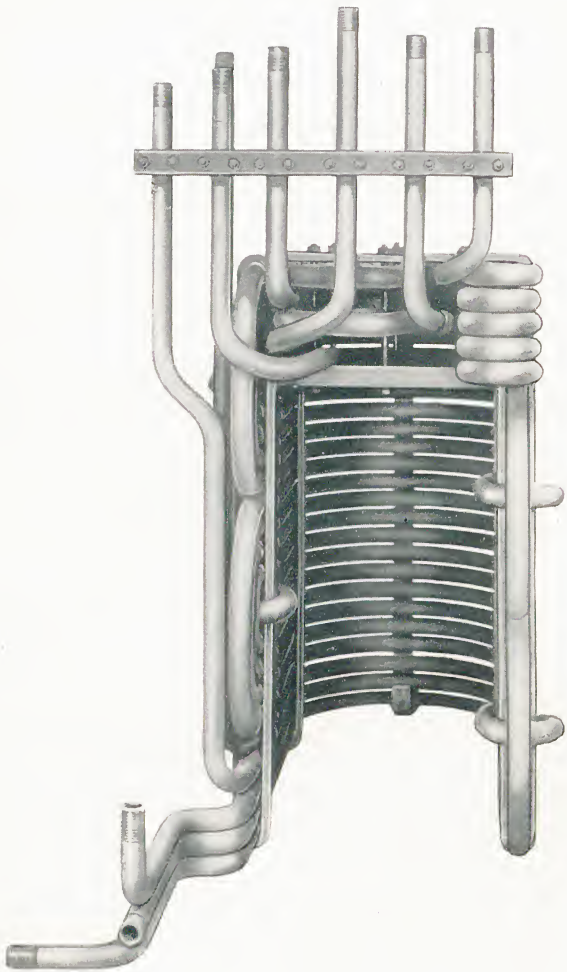
An 'S & L' horseshoe coil made from Perkins' high pressure hot water tubes.
(See page 90)

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Testing an internally welded sleeve joint on an ' S & L ' steel water main.
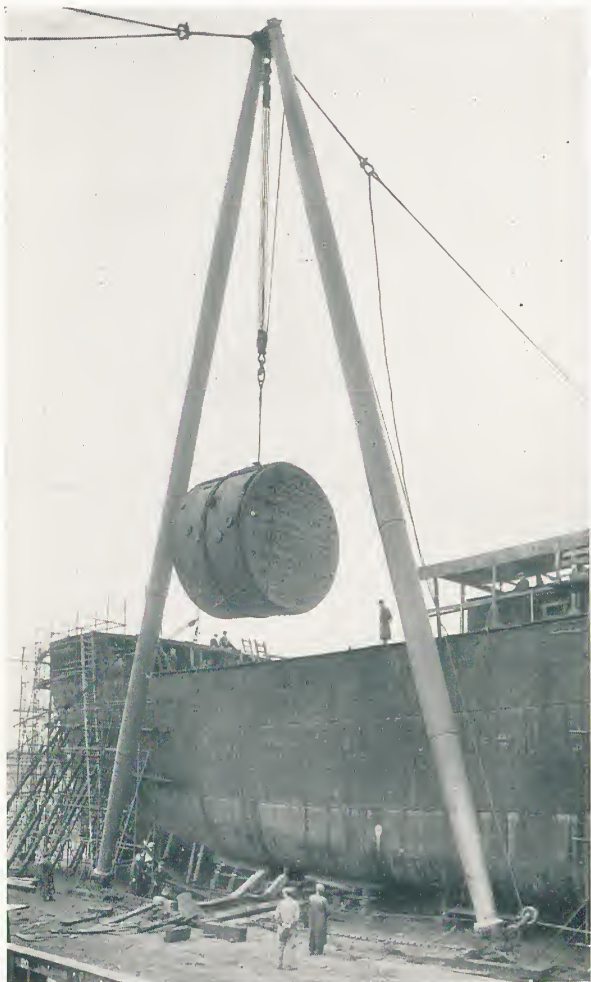
100 ft. 'S & L' tubular steel shear legs being used to lift a boiler weighing 44 tons.
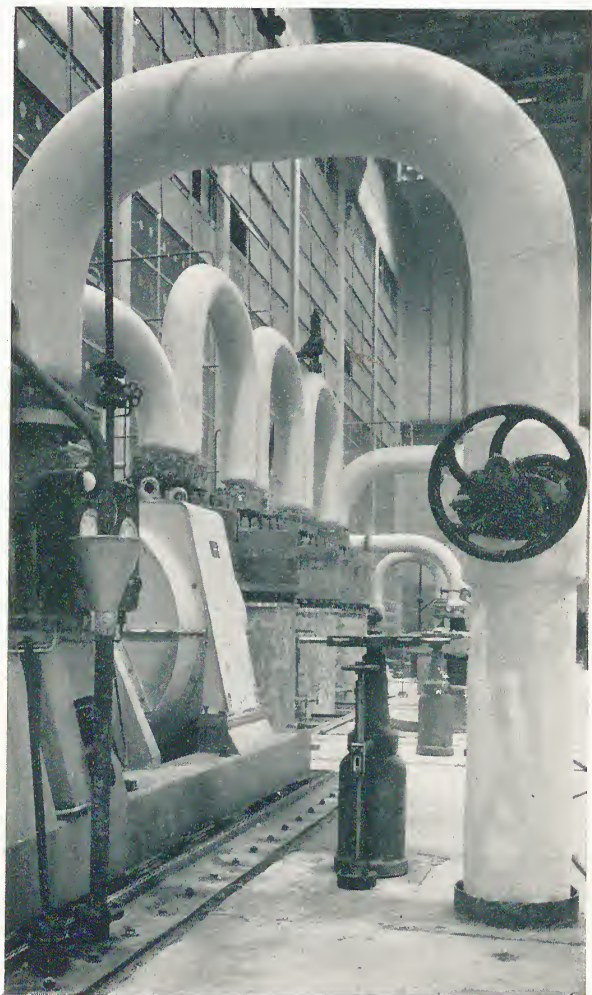
'S & L' high pressure steam piping for a working pressure of 900 lb. per sq. in. at 900°F. installed in Bromborough Power Station.
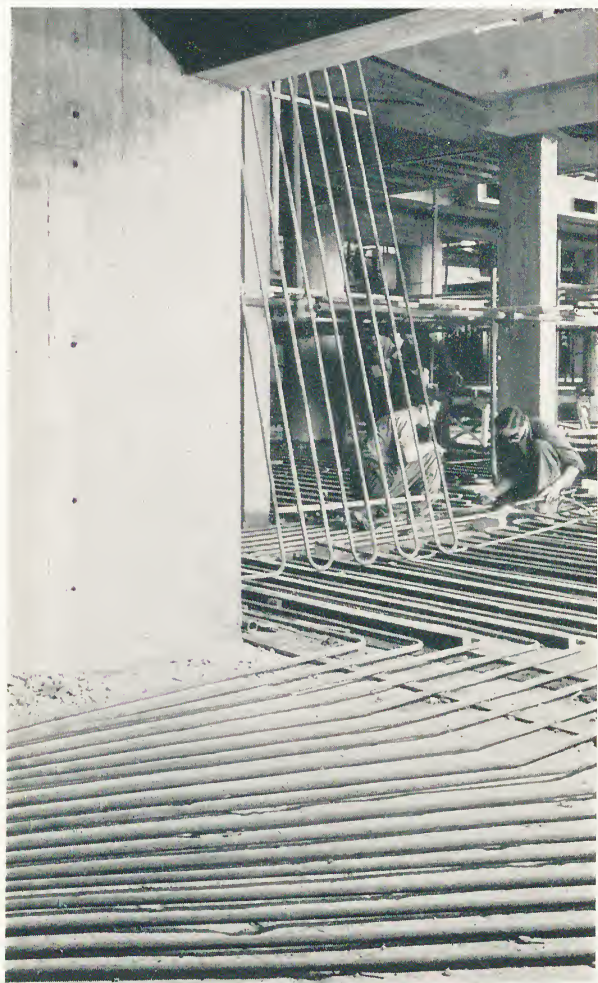
Heating panels, made from 'S & L' ½ inch steel tubes to B.S. 1387 Class C, being installed in a large public building.

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'S & L' steel pipes being laid between the harbour and the Aden refinery
of the Anglo-Iranian Oil Co.

Tubular Steel Products

Air heater tubes.
Air receivers.
Alloy steel tubes for high temperature service.
Ammonia tubes, plain at ends, screwed and socketed, and flanged.
Artesian well casing.

Baker's oven tubes.
Barrow frames.
Bent tubes of all sizes and shapes.
Bitumen lined and bitumen sheathed pipes.
Blast furnace tuyere coils.
Boiler tubes, locomotive steel, copper ended and copper covered.
Boiler tubes, seamless hot finished steel ⎫ For locomotive, marine and
Boiler tubes, seamless cold drawn steel ⎬ stationary boilers.
Boiler tubes, Electric Resistance Weld ⎭
Boiler uptake and cross tubes.
Bridges.
Bright drawn steel tubes.
Building frames : Agricultural, Factory, Hangar, House, Industrial, Multi-
Butt-welding Fittings.   [span, Portal, School, etc.

Casing shoes.
Casing tubes with screwed and coupled joints, swelled not cressed screwed
    joints, and screwed flush joints.
Chimneys.
Clothes posts.
Coils—flat, oval, round, square, interlaced and multiform for refrigeration,
    steam heating, high pressure hot water heating, etc.
Cold drawn steel tubes.
Columns.
Condenser tubes.
Controlled yield supports for underground workings.
Conveyor roller tubes.
Cooler tubes.
Core bars.
Crane jibs.
Cylinders with dished or flat ends.

Davits, tubular.
Dawson, all-welded joint for power plant pipework and all steam services.
Derricks and derrick posts, ships.
Derricks, drilling.
Dragline, jibs.

Economiser tubes.
Elderslie tubular steel shores for shipyards and graving docks.
Electric lighting columns.
Electric Resistance Weld tubes for boiler, superheater and other purposes.
Electric wiring tubes with specially smooth bore and rimered ends.
Excavator jibs.
Expansion joints and expansion bends for steam and other installations.
Expansion tubes for high pressure hot water heating installations.

Fabricated tubular work, of all descriptions.
Fencing.
Fire mains for collieries, low and high pressure.
Fittings—wrought iron, steel, cast iron and malleable cast iron, for air, gas,
Fittings, seamless, for butt-welding.   [water, steam and oil.
Flagstaffs.
Flanges, forged or struck steel, cast iron or cast steel, screwed or welded on.
Flush jointed (screwed) tubes.

Galvanized tubes, fittings, flanges, etc.
Gas lighting columns, reservoir or other types.

Gas mains with welded joints, Viking Johnson couplings, Victaulic joints,
Gas tubes and fittings.   [lead and yarn joints, or other types of joint.
Gates.

Handrailing.
Heat exchanger tubes.
Heater tubes, for marine boilers.
Hot finished seamless mild steel or high tensile steel tubes.
Hydraulic tubes, fittings and flanges.
Hydro-electric penstocks.

Jibs, special or multi-purpose.

Lead-lined tubes.
Locomotive steam, air and sand pipes.
Loose flange joint tubes—Stewarts', Albion, Carlton, Williams, Vulcan,
Masts, ship's or wireless.   [Victaulic, etc.

Oil heating tubes.
Oil lubricating tubes.
Oil line pipes.   ⎫
Oil well casing.   ⎬ To A.P.I. and other Specifications.
Oil well tubing.   ⎭

Pallets.
Pedestrian guardrails.
Pickets, screw and plain type.
Pipework installations, including all accessories, erected complete.
Pit props.
Pneumatic stowage pipes, with quick action couplings, for mines.
Point rods.
Poles, traction, trolley, telegraph, telephone, transmission, lighting.
Protection—all essential types of both internal and external protection.
Purlins.

Racks.
Rising mains.
Roller tubes for conveyors and for textile and other purposes.
Roof trusses.

Samson posts.
Scaffolding tubes.
Screwed and socketed tubes and fittings for air, gas, water, oil and steam,
Sewage mains.   [to B.S. 1387.
Shear legs.
Signal posts and gantries.
Signposts.
Spigot and socket lead and yarn joint tubes, for water, gas, sewage and air
Stay tubes for boilers.   [systems.
Steam jacketed pipes.
Steam pipe installations, and all accessories, erected complete.
Steam receivers and separators.
Steam tubes and fittings.
Stillages.
Structural and other fabricated tubular products.
Submerged mains.
Superheater elements—locomotive, marine and land types.
Superheater flue tubes.

Transformer oil piping.

Unions, steel.

Victaulic joint tubes, with bolted or toggle housings.
Viking Johnson couplings to suit plain end tubes for Water, Gas and Sewage.

Water mains with Viking Johnson couplings, welded joints, lead and yarn
Water tubes and fittings.   [joints, or other joints.
Welded joint tubes for welding into continuous mains.
Welding work of every description.
Well boring tubes to B.S. 879 and other specifications.

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